

USER MANUAL

IL2

STURMOVIK™

WWII COMBAT SIMULATOR





EDITORIAL NOTES

"This simulator was in development for more than 3 years. Its development required serious and hard work of aviation engineers, designers, programmers and test pilots—the staff of 1C:Maddox Games. We were in constant contact with the players community during development stage and tried to implement as many player's suggestions as possible to try to satisfy all user groups. The work is completed...we express many thanks to thousands of players, who helped and supported us during all those years. We also say many thanks to all pilots that were involved in long tests of flight models. We say many thanks to our beta-testers who helped us to eliminate bugs."

Oleg Maddox, Lead Designer of IL-2 Sturmovik

"I was a pilot at the 'Bundeswehr' and had a chance to fly a rebuilt variant of IL-2. After testing IL-2 for many hours I have to say that a new generation of flight simulators is born. IL-2 has the best FM I have ever seen in flight simulators. It's not only better...it's very close to real. Also, the graphics and damage model are amazing....with IL-2 you feel like you are in a real WWII surrounding. I can say such words about a flight simulator for the first time, but IL-2 is really fantastic."

Andreas Preusse, Pilot, Germany

"It has been an honor for me to be involved in the testing of this project. I am one of the few people in the world who realized the amount of effort and dedication that this sim took to develop—and I'm nevertheless amazed by the pay-offs. I think the combination of IL-2 team's engineering knowledge, real-world flying experience, passion for history and most of all complete devotion to perfection combined to create something more than just a sum of all parts. IL-2 takes flight simulators to a whole new level. It's the first sim I prefer to flying real planes."

Ilya Shevchenko, Private pilot, USA.

"For me, IL-2 is a very impressive flight simulation. It brings the feeling of aerial combat that is very close to real life, as opposed to other sims I've played. It is almost frightening how real the graphics and the flight model are. I also admire that one can now experience everything in front of the computer, from air combat to bomber escort. I almost feel like I'm again an active fighter pilot with the German Luftwaffe. IL-2 for me represents the most realistic flight simulation, most of all because of the flight model of the German fighters, and the feeling of air combat."

George Adam, Lieutenant of the German Luftwaffe, WWII

"Every WWII computer flight simulator I've seen or flown has been more game than simulator. IL-2 is the first one that looks, feels and sounds like the real thing. I've never seen a flight simulator that made you feel like you were really a ground attack/fighter pilot till I flew IL-2. Now when my grandsons ask what I did in WWII, I'll just sit them down in front of the computer and let them see for themselves."

Lt. Chuck Walters, P-47 Pilot E.T.O 1943/44





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I. GENERAL FEATURES

1. Fly 30 types of Russian, German and American aircraft. See them in different camouflage and paint schemes for different times of the year.
2. Fly as pilot or rear gunner.
3. Choose between realistic and simple flight models with many adjustments to various realism settings.
4. See 40 other types of aircraft engaged in large-scale air battles (with camouflage paint schemes changing from summer to winter).
5. Engage in air-to-air and air-to-ground battles.
6. Destroy ground objects such as buildings, bridges, airfields, etc.
7. Play quick missions using full mission parameter settings.
8. Play different types of single missions.
9. Play campaign missions and track your career (with ranks and awards).
10. Fight against intelligent AI opponents.
11. Play two different multiplayer modes: dog-fighting or cooperative missions across a LAN or the Internet with dedicated servers for online play.
12. Multiplay: up to 32 players in dogfight and 16 players in cooperative missions. Use custom paint schemes, squadron nose art, numbering on wings and national markings for each single plane.
13. Record a flight track of your flights and edit these tracks. Then play and enjoy your track files or send them to others (the Internet sim community can use these to confirm their online wins/kills).
14. Use network and Internet voice communications for multiplayer sessions.
15. Build new missions and scenarios with an easy-to-use mission builder. Create missions for single or multiplayer sessions.
16. Play new scenarios designed by other players.
17. Use new plane sets and new scenarios from free and/or commercial add-ons, designed by original developers after the release of the sim.
18. See aircraft and ground unit graphics of an exceptionally high quality.
19. See massive air and ground battles between German and Russian airplanes and tanks.
20. See realistic dynamic damage modeling.
21. See realistic 3D environments, including terrain, sky, unique clouds and weather conditions.
22. See realistic smoke, explosions, fire and other special effects.
23. Hear absorbing radio exchanges.
24. Compatible with a wide variety of 3D sound cards or drivers (Aureal 3D 3.0 or EAX 1.0, EAX 2.0).



Minimum system requirements:

Windows® 95/98/ME CD-ROM

Pentium® II 400 or AMD K6-3 400 (Pentium III/AMD K6-3 600 or better recommended)

128 MB RAM (256 MB RAM recommended)

16 MB RAM Direct X 8 compatible 3D Video card (32 MB RAM recommended)

Direct X 8 compatible Sound Card

Direct X 8 or Higher (Direct X 8 included on CD)

Internet Connection of LAN for Multiplayer

Overall quality will depend directly on the user's processor speed and 3D graphics accelerator.

II. INSTALLATION

1. Insert the IL-2 CD in your CD-ROM drive. The Autorun menu should start automatically. If you disabled Autorun for your CD-ROM, you may need to run the Install procedure manually (using Windows Explorer) from the CD.
2. Left-click the "Install" button on the displayed Autorun menu.
3. Follow the installation program's instructions to complete the setup. In case of any problems, the installation will stop and notify you of the nature of the matter.

You can also remove (uninstall) the game from your hard drive either from the Autorun menu, or by clicking the Start button, and selecting Program / Ubi Soft / IL-2 Sturmovik / Uninstall.

III. HARDWARE SETTINGS

Once the installation is complete, the Setup program starts automatically. The program enables you to select the correct settings for your video driver, video card, sound and input devices. In order to do this, you need to know at least the basic hardware types of the devices installed on your PC.

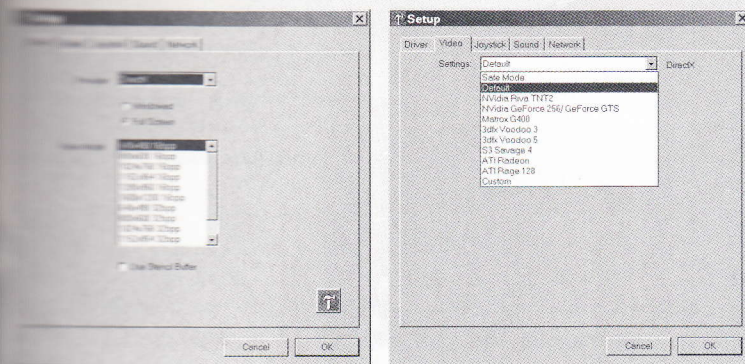


VIDEO

Driver – Driver and video mode setup.

These settings are similar to the internal IL-2 Video Modes dialog.

See the corresponding section concerning in-game menus below for a description.



Video – Video driver adjustment.

Adjust the game for correct operation with the appropriate driver.

OpenGL/DirectX settings are defined separately.

It is recommended that the latest video card drivers be installed.

If you should have any problems, check your driver settings in Windows. These can be found in Control Panel/Display Properties/Advanced.

If the game locks up or if the screen refreshes very slowly, check that other 3D applications or games (OpenGL/DirectX) start up and function properly. We advise against overclocking your video card or processor, or using nonstandard settings for them. Otherwise, uninterrupted game functioning is not guaranteed!

Settings – Drop-down menu for video card selection and setup.

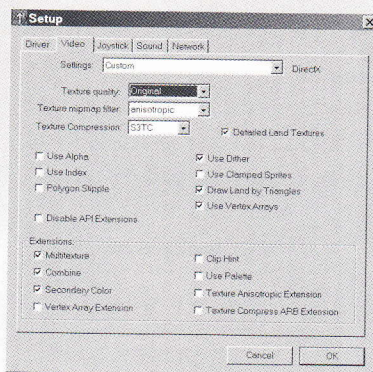
Special options in the Settings menu for detailed video driver adjustment.

Safe – Operating mode with minimum demand on the driver (the lowest quality and speed).

Default – Operating mode with average demand on the driver.

Custom – Detailed adjustment (at your own risk).





transparency in the absence of a Stencil Buffer.

Dither – Controls dither mode for 16-bit modes.

Use Clamped Sprite – Cuts down the number of polygons on sprite objects and effects.

Draw Land by Triangles – Displays landscapes with simple triangles.

Use Vertex Arrays – Reproduces geometry via vertex arrays.

Disable API Extensions – Forbids the use of video driver extensions.

Multitexture – For multitextures.

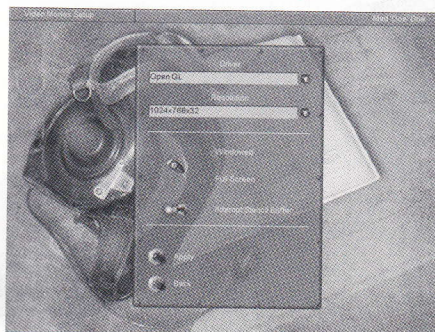
Combine – Improved texture combining.

Secondary Color – Used for fog and lighting.

Texture Anisotropic Extensions – Enables anisotropic texture filtering.

Texture Compress ARB Extension – enables S3TC compression.

3. Video Modes – Choosing video modes



Driver – Choosing between Direct8/OpenGL drivers. Choose the driver that best suits your video card in terms of rendering speed and quality.

Resolution – Choosing the screen resolution and color depth. Low resolution, e.g. 800x600x16 is recommended for earlier video cards. 1024x768x32 and higher should only be used on newer cards. This setting has the greatest effect on quality and frame rate.



Texture Quality – Texture resolution (see below).

Texture Mipmap Filter – Quality of texture filtering.

Texture Compression – Saves on memory considerably (the highest quality obtained with S3TC).

Detailed Land Textures – Use high resolution textures for landscapes (large amount of video memory and texture compression required).

Use Alpha/Use Index – Use additional texture formats.

Polygon Stipple – Emulate shading.

Windowed/Full Screen – Switches the main game display between windowed or full-screen mode. Only full-screen mode is currently recommended.

Stencil Buffer – Utilize Stencil Buffer. The Stencil Buffer is used to switch over to different textures, shadows, etc. It mostly works in 32-bit modes. It usually produces a dramatic increase in the frame rate on a number of older video cards. Recommended for 32-bit modes.

Apply – Apply new settings and return to the previous menu.

Back – Return to the previous menu.

Graphic Settings – Graphic Settings.

The 'Graphic Settings' box is used to define the game's graphics and efficiency. The result of the settings depends on the video card.

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Simplified – Move to simplified settings.

High/Low/Medium/Excellent Settings – Choose between overall quality: minimum/maximum.

Apply – Apply new settings.

Back – Return to previous menu.

Custom – Go to detailed settings.

Texture Quality – Texture resolution influences the amount of memory taken up by textures and the game in general. You can also use texture compression to reduce the memory used.

Visibility Distance – Visibility distance for objects.

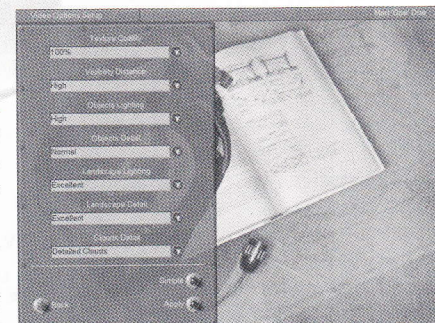
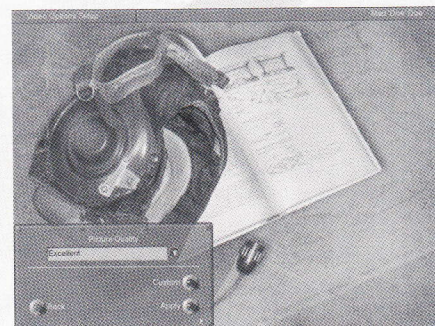
Objects Lighting – Quality of object lighting.

Objects Detail – Detail of object geometry.

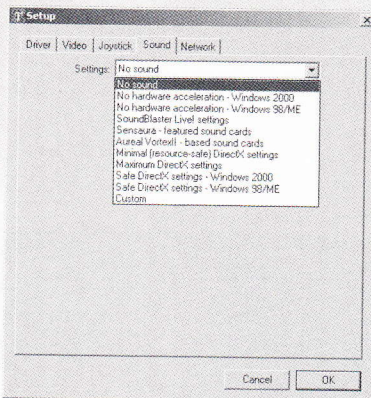
Landscape Lighting – Landscape lighting and shadows from objects.

Landscape Detail – Landscape detail (forest/trees/terrain/geometry).

Cloud Detail – Cloud visualization distance (their complete shutoff can be blocked in network play).



SOUND SETUP



Once the installation is completed, a rate IL-2 Setup configuration program start up. You can also use this program a more detailed adjustment of hardware settings.

(at your own risk)

The easiest way to adjust the sound is to choose from existing configurations.

Please choose your sound card from list. If it does not figure in the list, follow instructions below:

If your card supports 3D sound hardware acceleration or you are unsure about choose **Minimal or Maximal settings**.

If your card does not support 3D sound hardware acceleration or you experience sound-related problems, choose **No hardware acceleration** in accordance with the OS you are using.

If you want to adjust all the settings yourself, choose **Custom settings**.

The options in this dialog box reuse those in the game's sound menu (see below) with the exception of:

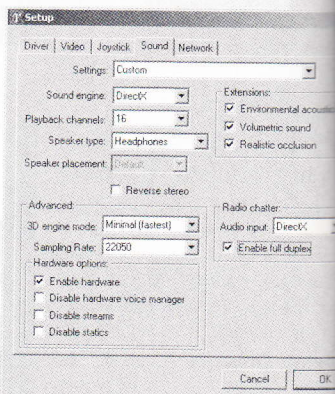
Disable hardware voice manager – Select this option if you have an accelerated sound card and the sound occasionally fades away and disappears.

Disable streams – Select this option if there are gaps in the sound. However, you will not be able to use the network telephone or listen to music.

Disable statics – Select this option if the sound effects are out of sync with the image.

Audio input – Devices used for the input of signals from the network telephone mike. DirectX required. "None" switches the telephone off.

Enable full duplex – This option should be selected.



MAIN IN-GAME SETTINGS

Go to the Sound Setup->Audio menu. This menu is used to adjust the sound settings.

"Sound engine" switch

If you have a sound card based on Creative Labs chips, use **Aureal3D**. In other cases, use **DirectX**. To switch off the sound, use **Disable sound**.

Sound card If you have switched on **DirectX** mode and your card uses a driver other than Aureal, the game will probably hang up/crash.

"Disable Hardware" switch

If your sound card has hardware acceleration, flick the switch on. This enhances the sound quality considerably and reduces CPU load. If there is no acceleration, the position of the switch is irrelevant. Should any sound-related problems occur, the switch must be turned off.

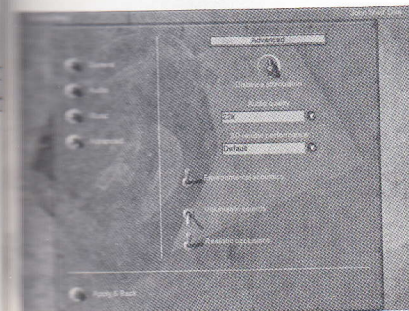
"Playback channels" switch

If your sound card has no hardware acceleration or if the hardware acceleration has been switched off with the **Enable Hardware** switch, the parameter has a great effect on the CPU load. Use the **Default** or **16** values. We recommend that you use **16** for Windows 2000 and NT.

"Speakers type" and "Reverse stereo" switches

Select the type of audio device you are using: headphones, desktop speakers or system 5.1 (surround). If the stereo channels seem to be reversed, use the **Reverse stereo** switch.

Advanced Menu



This menu is used to adjust additional settings. The **Audio quality** and **3D rendering performance** settings determine the ratio of sound quality to the rate of CPU load; the other settings affect the sound.

The **Audio quality** and **3D Rendering performance** switches affect the sound quality and for the most part the CPU load. The optimal **Audio quality** value is **22kHz**.



The value of the **3D Rendering performance** only applies if your sound card has hardware acceleration or if the hardware acceleration has been switched off with the **Enable Hardware** switch. In this case, CPU operation is fast when the switch is at the Minimum position; CPU operation is correspondingly slow if the switch is at Maximum. It is recommended that you use the **Default** or **Minimum** values.

The **Distance attenuation** regulator sets the rate at which the sound volume decreases, if the distance to its source is increased.

The **Environmental acoustics** switch enables the use of EAX or A3D virtual acoustic interfaces, if they are supported by your sound card.

The **Volumetric sounds** switch activates 3D sound sources using Sensaura technology (it should be mentioned that with the current Sensaura driver version – 2101 – this technology does not work very well).

The **Realistic occlusions** switch determines whether the obstacles (for example, the hull of the aircraft) will reduce the sound volume. If it is switched on and you are inside the aircraft, it becomes more difficult to distinguish the sounds from the outside. If your sound card supports EAX or A3D, you should flick the **Environmental acoustics** switch. You can use the other two switches at your discretion.

Adjusting sound volume

Sound volume is adjusted using the corresponding controls in the

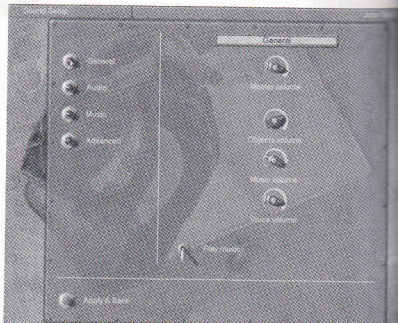
Sound Setup->General menu:

Master volume – general level of volume for all sources.

Objects volume – relative effects volume.

Music volume – relative music volume.

Voice volume – relative volume of voice messages and network telephone.



Music playback

Music in the game is activated via the Play music switch in the Sound Setup->General menu.

The music volume is adjusted using the **Music Volume** control in the **General** menu.

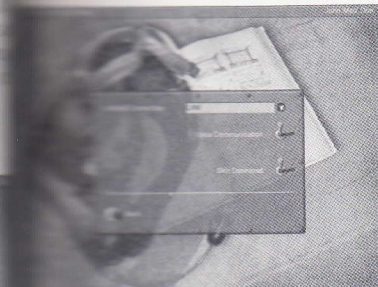
Whether the music is to be switched on or off in a given gameplay episode is defined in **Sound Setup->Music** menu.

Play take-off tracks – play music during take-off.

Play in-flight tracks – play music in flight.

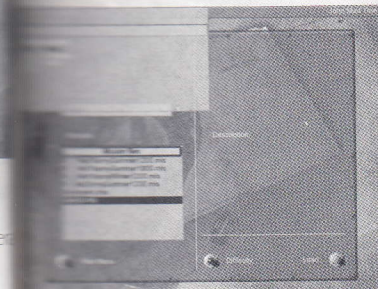
Play crash tracks – play music when damaged.

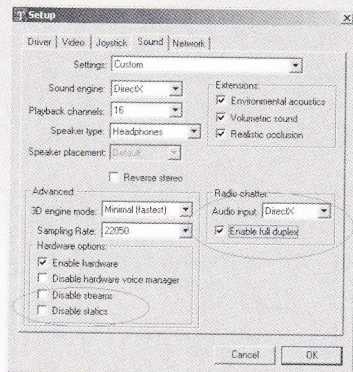
You can add music files at your own discretion via Samples/Music/directory. The music should be in Windows WAVE-file, MPEG 1.3 format. The files for playback are chosen at random.



Network voice communication is activated using the **Voice Communications** switch in the **Network** menu. It starts working when you subsequently enter the next LAN or Internet game. The volume is adjusted using the **Voice volume** switch in the **Sound Setup->General** menu.

The channel for communication is chosen in the chat window. Only players using the same channel can hear each other. If you enter "." (dot) in the text box window, a list of channels will appear at the bottom of the screen. You can use this list to select the working channel by pressing the UP and DOWN arrows or by entering its number. The list gives the channel number and name. The number of players switched on to the channel is indicated in brackets. The current working channel is highlighted in a different color, and has a "*" symbol.





If you are experiencing problems of any kind related to network voice communications, make sure the following settings are correct in the separate IL-2setup.exe program, in the Setup section:

"Advanced" group

Disable streams – deselected.

Disable static – deselected.

"Radio chatter" group

Audio input – "DirectX."

Enable full duplex – selected.

If the game does not run well with voice comms, these can be switched off by choosing **Audio input** -> **None** in the IL-2 Setup.

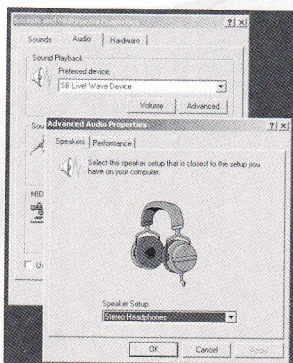
Adjusting the sound in Windows

DirectX sound settings in Windows can be found in the **Control Panel->Sounds and Multimedia->Audio** dialog box. Sounds and Multimedia may simply be called Sounds in some versions of Windows.

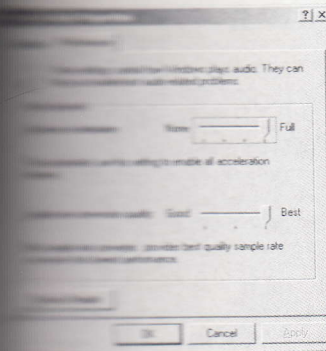
To adjust the sound hardware acceleration, choose **Sound Playback->Advanced** (see below).

If you have several sound devices installed (for example, a chip on the motherboard and a separate card), choose the one you prefer in the **Preferred devices** list and select the **Use only preferred devices** option.

In addition to this dialog box, your sound card may have additional adjustment options.



Choose the sound device you are using in the **Speakers** dialog box.



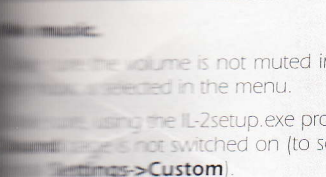
Choose the **Hardware acceleration->Full** position of the switch in the **Performance** dialog box. If this creates problems with the sound, select **Basic acceleration** or, as a last resort, **Emulation only**.

Troubleshooting

No sound.

Make sure the sound is not switched off in the **Sound Setup->Audio** menu.

Make sure the volume is not muted in the **Sound Setup->General** menu.



Make sure the volume is not muted in the **Sound Setup->General** menu and that **Basic acceleration** is selected in the menu.

Make sure, using the IL-2setup.exe program, that the **Disable Streams** option on the **Advanced** page is not switched on (to see all the components on the page, you should choose **Settings->Custom**).

Network voice comms

You can hear messages of other players in Windows NT4.0, but you cannot talk in most versions. This does not hold for Windows 2000.

Make sure your telephone is switched on (see above).

Check all the options in the **No music** paragraph.

JOYSTICK SETUP

The game generally supports a vast range of basic joysticks by different manufacturers. Use **Joystick** in the setup program. Press the **Properties** button and make sure the joystick drivers have been installed and work correctly with your Joystick. If the setup program detected your joystick's Force Feedback feature and displays it, you can enable or disable this feature. Read about other features and the control settings in the **CONTROLS** section of this manual.



IV. TUTORIAL

1. Flying Essentials

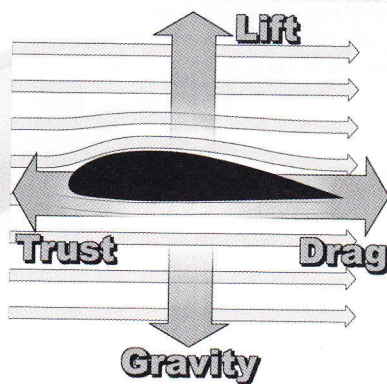
At this stage in history we are all used to the sight of planes soaring above us. But you actually know how aircraft manage to get up in the air and stay there? If you're not entirely sure about the answer to that one, there's no need to panic – you won't be smothering you with a load of old formulas from physics classes, which you've probably forgotten anyway. What you should know, however, is that the interaction of a number of forces has a key part to play in the whole wonder of flying. These forces are as follows:

Thrust – The force that pulls an aircraft forward.

Drag – The resistance of the environment that has to be overcome by thrust, the body can engage in any sort of movement (sound familiar at all?).

Gravity – The force which would just love to keep every single object on the ground (plane or no plane!) fixed very firmly to the ground.

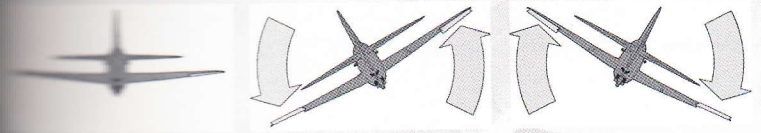
Lift – This is generated when the air pushes the plane upwards because of the specially formed wings. If a plane has enough thrust, it can overcome drag and start moving. Once sufficient speed has been attained, enough lift will build up at the wing to defy gravity and allow the plane to take off. Simple, isn't it? In reality things are a little more complex than that, but we'll leave it there for the moment.



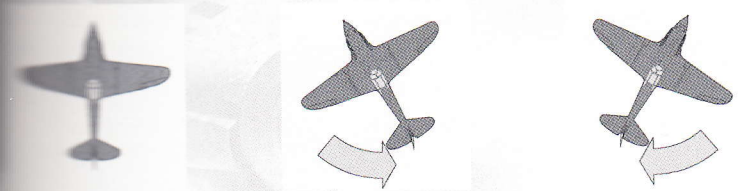
Roll, Pitch, Yaw: Axes of Movement

On land-based vehicles, a plane can move in an extra direction, or, if you prefer, an up and down dimension. It can even be argued that a plane can move in TWO extra dimensions, even though both types of movement concern the same direction. These movements are pitch and roll – more on them later.

Movements along a plane's three different axes are made possible via special flight controls, which a pilot operates via the stick and the rudder pedals. There are diagrams for the various movement options, and you should make sure that you understand the role of these, as they are extremely important for making sense of the chapter on flying.

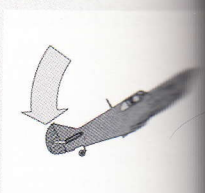
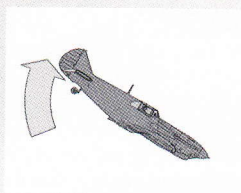
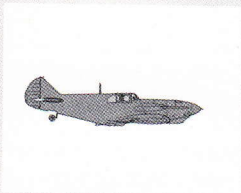


Movements around the plane's roll axis are carried out with the so-called ailerons. They allow the plane to revolve around the direction where its nose is pointing, and allow it to perform turns. This movement is known as "rolling." To move the plane around the roll axis, the pilot moves the stick in the desired turn direction, which can be either left or right.



Turning movements around the yaw axis are known as "yawing" and are carried out with the rudder. A plane responds to this exactly like a car responds to the steering wheel. Even more like a car, a plane is also steered via the rudder when it is on the ground; on modern planes the rudder is connected to the steerable landing gear, for example. Left rudder allows the plane to be "yawed" (turned) to the left, and, logically enough, right rudder enables yawing to the right.





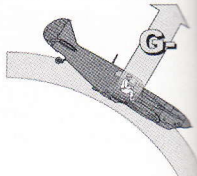
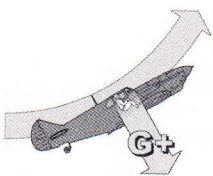
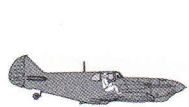
Movements around the pitch axis allow the plane to ascend or descend. This is known as "pitching." You pull the stick back to pitch the plane upwards, and push the stick forward to carry out a downward pitching movement.

Positive and Negative G-Forces

G-forces start to take their toll as soon as you start to carry out maneuvers at high speed and with quick direction changes. The "G" stands for gravitational and "1 G" is the force of attraction exerted by the earth. If you fly a tight, high-speed turn, the force involved means that your body cannot keep up with the rapid movement, and you will be forced into the other direction by a multiple of the force of attraction. If the level of G-forces becomes excessive, you can even experience a blackout, which will eventually lead to loss of consciousness. Trained jet pilots can put up with 9G for short periods of time with special equipment, but it's not exactly their idea of fun!

You can experience the effects of negative G-forces if you force your aircraft downwards at high speed out of level flight. You will be practically lifted out of your seat and become weightless for a short while. If you take things too far, you will have a (literal) spout of blood to the head and become rather red in the face, to say the least. Your body can deal with positive G-forces better than with negative ones.

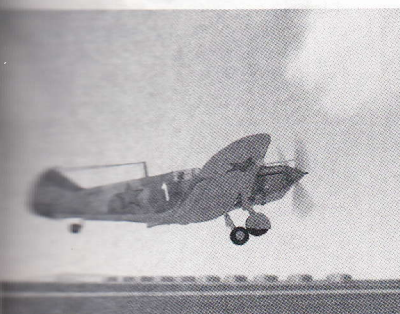
When playing IL-2, if your screen goes black in mid-flight, this probably has nothing to do with your graphics card, but with the effects of excessively high positive G-forces. These forces can be turned off in the "Difficulty/Realism" menu.



Basic Flying Maneuvers

Now that you know which instruments are really important (please take a look at the instrument panel—the main indicators are Altimeter, Climb, Artificial Horizon, Turn, and Tachometer), you can start thinking about getting your plane into the air! And while you're thinking about it, consider over the fact that the planes of this era were, for the most part, designed with a small wheel at the rear—the tail wheel. Unfortunately, this meant that the tail wheel was raised in front of your cockpit, and therefore these planes had a very poor view (if any!) of the ground in front when taxiing and in the first part of takeoff. You can compensate for this by looking out of the side of the cockpit and using the turn indicator for orientation. Of course, you could always make things nice and easy by switching to one of the external views using either the F2 or the F7 keys.

Once you have lined up on the runway you should proceed as follows: extend the landing gear (L key twice). Start to accelerate slowly and check the tachometer to see whether or not the engine is reacting to your movements on the throttle. Now pull the throttle lever all the way forward. As your aircraft gains speed, you may have to compensate for the engine's torque by gently applying the rudder. Make sure you keep your eye on the turn indicator during this process! To begin with, you should have the stick held towards you in order to exert pressure on the tail wheel and thus prevent a premature takeoff. Once you have attained sufficient speed, press on the stick to lift the tail wheel off the ground. Don't press too hard or the propeller may stall. If you're on the ground (if you are flying the P-39 Airacobra, forget everything we said about tail wheels—the P-39 already had the tricycle landing gear which is standard today).



The aircraft should now build up speed quickly. Once you have reached an adequate speed, draw back the stick gently. Make sure you don't pull too strongly and do not try to make a sharp turn straight away. This could result in the plane stalling and you will not have enough space beneath you to correct in time. First retract the landing gear (G key) and then the flaps (V). Monitor your speed closely, and do not pull your nose too sharply right away. Let your airspeed get at least above 180-200

mph, then start climbing and make sure that you keep gaining speed and altitude. Once you have reached your desired height, throttle back so as not to overburden the engine. Adopt a level flight attitude. Congratulations—you're flying!



Climbing

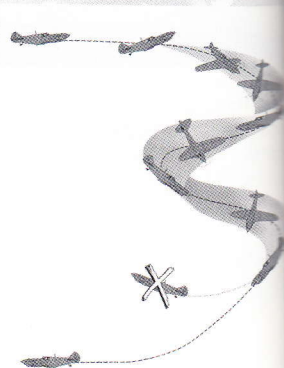
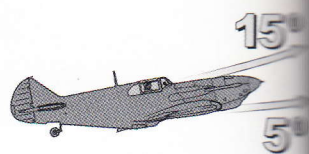
To get the aircraft to climb, simply increase the throttle! You will start moving more slowly, and thanks to the increased flow speed of the air moving over the wings, you will be getting more lift. The more impatient flight simmers amongst you may be tempted to simply pull the stick back. The more you pull, the steeper the plane will climb up to a point. A glance at the airspeed indicator will suffice to confirm that you are losing speed at the same time. Lower the nose a little so as not to slow down too much, but make sure that it remains above the horizon. If you are lucky enough to be sitting in a luxury cockpit, you may find an artificial horizon with which you can control your angle of attack. An incline of about 20° generally represents a good compromise between your climb rate and your airspeed.

Stalling

If you get carried away with pulling back the stick, your speed will ultimately drop to an unacceptable level: the airflow over the wings will reduce and you will soon find your plane lacking the necessary lift to keep you in the air. You have stalled the aircraft, gravity has regained its grip on you and the next stop will be a rather premature reunion with mother earth. In a situation like this, though, panicking is the very last thing you should do: simply center the stick and let the plane go. Don't carry out any steering operations at all—these are pointless in a situation like this anyway. The nose should be pointing down toward the ground and the aircraft will be dropping rapidly in much the same direction. As this happens, the plane will regain speed, causing the control surfaces to react again. Once you have reached sufficient airspeed, bring the plane out of its fall and return it to level flight. Do try to maneuver out, as you will probably find that you stall at inconvenient moments (like the heat of battle, for example) and so a certain amount of practice in a non critical situation will pay off. But do please make sure that you always have a sufficient amount of space between your plane and the ground before you embark on a training session.

Spins

If you are really unlucky, you may find that your plane doesn't just stall, but also goes into a spin. Spinning means (amongst other things) that your plane keeps rotating uncontrollably around its roll axis. A spin occurs when a stall has affected only one wing in an excessively tight turn for example. Rescuing a plane that has gone into a spin is considerably more difficult than righting an aircraft that has merely stalled, and sometimes this is simply not possible. The first thing you have to establish is the direction in which the plane is rotating around the roll axis. If you can't identify this, you should have no reservations about switching to an external view via F2 or F7.



...determined the direction of the spin, you can attempt a rescue operation. Pull the stick into a neutral position. Under no circumstances should you operate the rudder (moving the stick left or right) as this would only make the spin worse! You should step on the rudder in the opposite direction to the one in which you are spinning. After that it's just a question of waiting until the plane stops spinning. If you don't see any improvement, your best bet is just to try again. If the plane stops spinning then your battle is almost over: all you have to do then is pull the stick back and the plane has picked up sufficient speed for the control surfaces to start working again. Then you can put an end to the dive and return to normality! Well, it's not as simple as it looked before....

...that you will notice to your dismay just how much height you have lost. If you happen to fall into a spin at low altitude, time really is of the essence and you should bail out without further ado (CTRL + E). Then again, you may find that the maneuver described above doesn't actually achieve anything. In some cases you may find yourself in a flat spin, a particularly unpleasant variety in which you find yourself spinning around your yaw axis. Rescuing an aircraft which has fallen into a flat spin is nearly impossible, and abandoning the plane to its fate via CTRL + E is by far your best option.

Level Flight

...is wonderfully simple, doesn't it? Which is true for the most part, at least once you have grasped the basics. Level flight involves flying straight ahead without changing altitude, with all the forces which act upon the plane in balance. This balance means that the plane can fly in a straight line more or less of its own accord, without too much intervention from the pilot. Although relatively simple, the aircraft needs your help to maintain this mode. Depending on the on board load (weapons, fuel, personnel etc.) the center of gravity changes, which in turn has an effect on the flight attitude.

...and indeed should, counter these factors by adjusting your aircraft's trimming. This involves fine-tuning the control surfaces to enable a constant, balanced flight attitude. If your plane is dipping to the left slightly, for example, this is not necessarily due to a movement of the stick. Instead, trim the plane to make it lean to the right by holding down the "CTRL" key and pressing the right arrow key until you have fully countered the lean to the left. If, on the other hand, the plane is inclining upwards, you can counter this tendency by simply easing off the gas slightly. Less thrust = less speed = less lift—remember? If that doesn't work, trim your plane by using the CTRL and down arrow keys to make it slightly nose-heavy. Feel free to experiment a little with trimming and do make sure that you are familiar with the key commands involved (Chapter 6).



Turns

To turn the aircraft, you first have to bank it around the roll axis, in the direction you wish to turn. To do this, gently move the stick in your chosen direction until you have reached an angle of about 20° – 25° . The plane will describe a gentle curve, moving the nose down slightly in doing so. You should therefore gently move the stick back so as not to lose too much height. Gently use the rudder and keep a very close eye on the indicator: if you want to become a really good pilot, your operation of the stick should cause the ball in the indicator's spirit level to move as little as possible, remaining in the center of the display. This sort of a turn is known as a "coordinated turn." The plane is not forced to one side, but follows the radius of the curve without lurching to the side. Although your stick may return to a central position of its own accord, in order to return to level flight you will have to steer it into the opposite direction yourself.

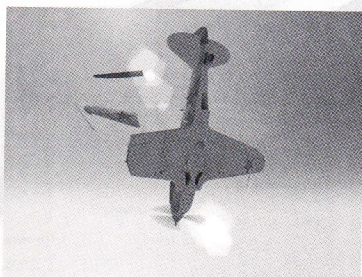
Controlled Descent

"You always get down eventually," so the saying goes. Which is true enough, but you have to remember that there are all sorts of ways of getting your feet, and your plane, firmly back on the ground. If you just point your plane's nose at the ground, you will gain speed—too much speed. You will certainly be traveling too fast for the majority of planes from the Second World War period. On your way down you are likely to feel a little bit shaky, and then it won't be long at all until pieces of your wings are doing their own flying around you. Try explaining that particular strategy to your mechanic if you are still able to!

You should always ensure that you prepare for your descent and landing carefully. The first thing you should do is to decelerate. The plane will embark on a gentle descent due to the reduction in thrust resulting from its lower speed. Check this by taking a look

at your rate of climb indicator. Then pull the stick forward slightly, all the time keeping the airspeed indicator in view. Depending on the type of plane you are flying, there is a varying range of speeds which can be flown safely at this stage. If you are flying too fast, simply reduce your angle of descent and gently pull the stick toward you.

If your cockpit has an artificial horizon, check your flight attitude if you're not totally sure that you can rely on your instincts.



by flying broad descending curves, as you automatically slow down when you descend. Always watch your speed very carefully during this procedure, or you run the risk of stalling.



There is one handy trick which can help you to lose altitude without speeding up: gently roll the plane to one side and at the same time counter this movement with the rudder so that you don't actually turn. This will mean that you are flying at a slant, but this will be useful in your descent. This maneuver is known as a "slip" or "side-slip," and was invented by WWI pilots to compensate for the fact that their planes were a good deal more fragile than the ones you will meet in IL-2 Sturmovik.

If your plane is of a robust constitution, you can use the so-called "Split-S" figure-eight in section 5.4.3. This will expose you to high levels of G-forces, so don't attempt it unless you've been warned!

If you need to get down to the ground fast, like in case of crash-landing after battle, drop your throttle to idle and drop full flaps. Point your nose downwards, and you will take more strength than usual as the flaps will generate excessive lift. Keep the flaps down to allow for your airspeed to drop. Once at speeds below 300 km/h, drop your gear – then level out as close to the ground as you can and continue flying at a very shallow angle until you touch down.

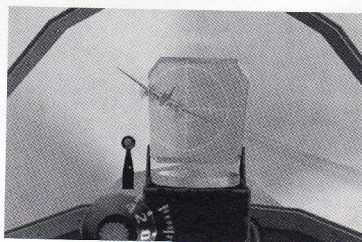
Preparing for Air Combat Maneuvers

If you have mastered the previous sections and taken the advice to heart, you should now be in a good position to perform clean takeoffs and landings and to squeeze in a few well-timed, coordinated turns in between. All this is, of course, admirable, and we are extremely proud of you! But we trust that you won't be too crestfallen when we tell you that these skills alone are not enough to make you into a flying ace. It may be of some comfort to hear that you are not alone in this regard. Many of the world's most famous pilots had to put in many a long hour of practice, learning from their mistakes all along the way before they were able to acquire the talents which set them apart from less successful, merely average pilots. And then there are just some things which can probably never be learned: abilities which you either have or have not got. For more on this topic, take a look at section 5.5. Don't start turning the pages just yet, though—first of all we're going to introduce you to the key maneuvers of air combat.

4.1. Offensive Maneuvers

"You have to get up to a distance of about 70 meters from the target before you can open fire. A big mistake which is often made lies in losing speed when you make a turn to shoot at the last minute. This doesn't work—the distance simply gets bigger and you can even lose touch with the target completely. If you shoot from too far a distance away, you just let the enemy know where you are because of the noise of the shots leave, and the enemy can frequently get away. Another frequent error lies in diving on the enemy too quickly and then not being able to brake in time. This means that you end up in front of the target."

John Cunningham, R.A.F. Night Fighter
Quote from: Sims, Edward H.: *Fighter Tactics And Strategy* 1914



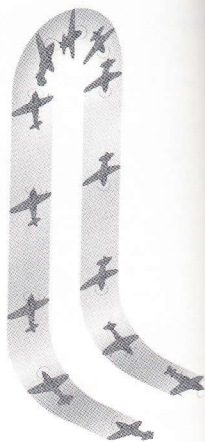
In general, air combat maneuvers are divided into two categories: offensive and defensive maneuvers. An offensive maneuver is, in a one-on-one air battle (also known as a dogfight), for instance, focuses on bringing down the enemy as quickly as possible. This generally involves taking an opponent completely by surprise (the ideal situation!) or outmaneuvering him to such a degree that you a) get into a good position and b) stay out of trouble as much as possible.

As is often the case, theory is considerably easier than practice here. With a little of the latter, you should be able to achieve a certain amount of success before too long.

Hammerhead

This maneuver was known as "Immelmann" in WWI, named so after a famous German ace Max Immelmann. Whether he was really the first pilot to carry out this maneuver is open to question, but what is beyond doubt is that he could perform it to perfection. However, since then the terms changed and Immelman in WWII is something completely different.

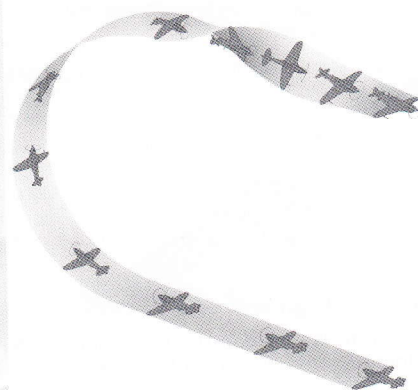
A typical hammerhead involves flying the plane straight up in the sky until shortly before a stall, then using full rudder to carry out a 180° turn about the yaw axis and subsequently going into a dive. The point of this piece of aerial acrobatics is to enable you to tuck yourself in behind an aircraft which was flying in the opposite direction to you before you carried out the maneuver. To execute it to perfection you will need good timing and a good reserve of speed to be able to carry out the steep climb at the beginning.



...you are flying at an adequate speed to begin with. If need be, lower the speed a little extra speed. Gently but firmly, pull your plane around so that it is flying straight up. Don't lose sight of your airspeed indicator! Before you lose speed and therefore stall, step on the rudder pedals. Then turn the plane around so that the nose is pointing down to the ground, gently using the rudder pedals. Pay careful attention to your course indicator or a compass—if you are flying according to plan you should now be pointing in exactly the opposite direction from the one in which you started. At the same time you should also pull the stick back. Recover the plane from the dive once you have reached your desired altitude. In critical situations you should aim to end up slightly beneath the enemy aircraft, thus putting you out of the range of any gunners on board and with any luck you will be out of the range of enemy pilots.

The term "Immelmann" is used to refer to a maneuver known as a "half-loop." This involves trying to change the direction of the plane by 180 degrees in as little time as possible. However, the pilot can do this in a different way, by pulling the stick back to pull the plane upwards half loop instead of the full loop described above.

When you begin an Immelmann, you should again make sure that you are traveling at sufficient speed, and you need to be moving fast to complete the maneuver that follows. Keep the wings nice and level, pull the stick back and move your feet forward. While you are climbing, you should roll slightly to one side. When you choose which direction to pull back on the stick until your plane is flying in the opposite direction to the one in which you started. While you're doing this you should keep a close eye on the course indicator or the compass. Using the ailerons, turn the plane around the roll until you are flying in a normal flight attitude once again. You will now have gained altitude and will gradually be picking up speed again, flying in the opposite direction to the one in which you started.



Loop

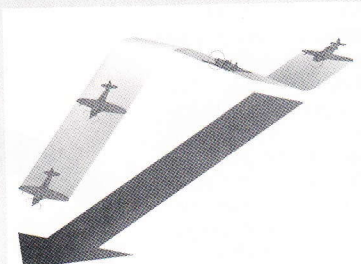
This well-known maneuver is perhaps the least useful of all in combat—at least that's probably the answer you would get if you could still ask Manfred von Richthofen, the famous "Red Baron," for his esteemed opinion of looping. Some pilots, however, just cannot get enough of this tactic. There are indeed good reasons not to carry out this maneuver during an air battle, particularly because it takes a good deal of time and also requires sufficient speed and altitude to complete a loop fully. However, you should certainly be acquainted with this particular trick, if only so that you know how to react should an opponent in front of you decide to try it out himself.

Sufficient speed is essential before you can even think about attempting a loop. First, lower your plane's nose a little to gain speed. Pull the plane up into the sky with its wings level. Keep the stick pulled toward you and just wait until you are moving in your original direction again. That's it—it's as simple as that! Oh yes, to be on the safe side and make sure that you perform as good a loop as you can, you may find the following trick useful: look out of the cockpit to one side and keep your eye on the tip. If you get everything right, the tip will describe a perfect circle. Then again, being alone doesn't count for all that much up in the sky...but it won't be long before you find that out for yourself anyway!

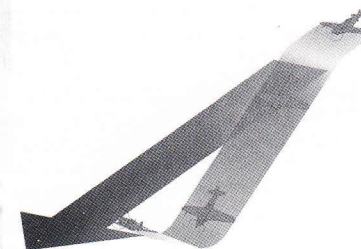
Yo-Yos 1: High and Low Yo-Yos

"The Yo-Yo is very difficult to explain. It was first perfected by the well-known Chinese fighter pilot Yo-Yo Noritake. He also found it difficult to explain, because he was quite devoid of English"

Squadron Leader K.G. Holland, RAF. Quote from L. Shaw's "Fighter Tactics"



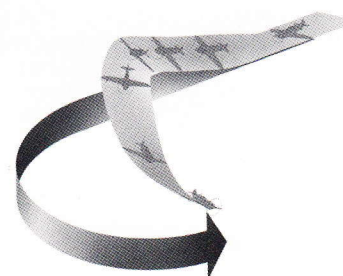
If you perform a yo-yo maneuver correctly, you can maneuver directly behind the enemy despite the difference in speed or turn performance. And that in itself is very often half the battle!



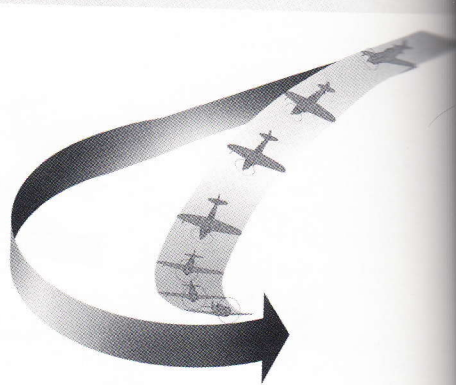
Yo-Yos 2: High and Low Yo-Yos

Planning

The yo-yo maneuver can also be deployed during banking in order to stay behind an adversary whose plane is more maneuverable than yours. Again, the trick here lies in using space as efficiently as you can in order to make up for any comparative disadvantages which your plane may have.



Pursue an adversary flying ahead of you and turn at the same time as he does. But instead of trying to follow him directly, pull back on the stick, thus lifting you above your target for a moment. Watch out though: you will probably lose sight of him temporarily. Now roll your plane into a slightly tighter turn, thus moving yourself more sharply into the radius of your opponent's turn. When he has turned a bit further, you will be able to use your height advantage to pounce on him from above and should land right behind him—if you've got a sharp right, that is!



Follow the opponent ahead of you into the turn, and push forward on the stick to make your plane descend. Cut back on the throttle so as not to gain too much speed. Then fly a longer distance before cutting into your enemy's tighter turn radius. Pull back on the stick as you are doing this, lifting your plane straight up. With a little practice, you should land right behind your enemy and thus in a good firing position.

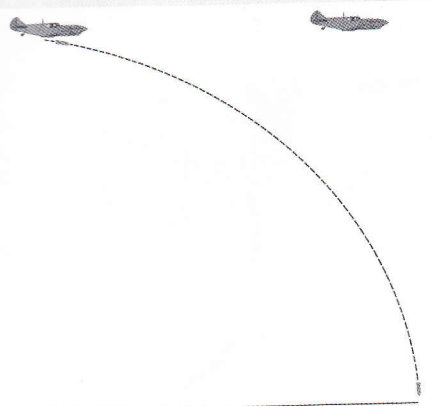
The thing is, there's no real difference between low and high yo-yos that can be explained. Both can be used in the same situation, often with the exact same result. In both you dive and climb, just in different order. It can be argued that you're better in a high yo-yo as your plane spends more time at lower speeds—but this is a matter of individual plane's characteristics. The truth is, turns are almost never perfectly horizontal in combat. If their opponent is climbing, pilots tend to counter with high yo-yos. If an opponent is diving or is generally below, a low yo-yo is recommended.

4.2 Attacks on Ground Targets

Right, that's enough about dogfights. In IL-2 Sturmovik, attacks on ground targets are a particularly important role, and the rules for this type of combat are somewhat different. Attacking ground targets is all about trying to score a direct hit in as few attempts as possible while remaining in one piece. As you can no doubt imagine, the enemy won't exactly welcome your attacks with open arms, and being able to counter his defenses is of prime importance.

Attacking from High Altitudes

To escape fire from ground targets such as tanks, you can opt to attack from high altitudes. This strategy certainly has its merits, but is, however, relatively impractical. It requires a high degree of accuracy to be truly successful. What makes dropping bombs from such great heights difficult is the speed. Your bombs won't just drop to the ground in a straight line, but will travel a certain distance in the air depending on the speed you were flying when they were released. Large bombs need a bombardier to direct the bombs and release them, but in an IL-2, for



you will have to take on these duties yourself.

If you have identified a target, fly toward it at high altitude. As you're making your approach, you may wish to switch to an external view using the F2 or F7 key. When the target, you will have to release the bombs long before you fly over the target, you will have fun practicing!

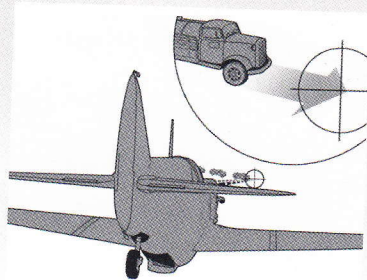
Dive Bombing

To improve the accuracy of bombing missions, dive-bombing tactics were developed during the First World War. The idea behind this strategy is to plunge down on to the target in a straight line, so that there is almost no horizontal distance between the plane and the plane when the bomb is released. This release technique was developed by the US Air Force and adopted by the German Luftwaffe. It ultimately led to the development of notorious aircraft such as the Junkers Ju-87 and Ju-88, which were specifically designed for this type of bombing.



Deflection Shooting

If you try to shoot at a moving target, you will probably notice the following: that you approach a truck, which is traveling in front of you, from behind.



to the side. You've got him right in the center of your sights and press the trigger. You still don't hit the target. The reason is simple—even though your target is extremely quick, they still have a distance to travel before they arrive at their destination. They will actually hit the ground a little further itself—to cut a long story short, you have lined up for them, but when they make impact the truck will have moved a little further itself—to cut a long story short, you missed! You may actually end up hitting the target—if you have aimed at a very slow specimen of the truck speed.

The bottom line is that you should always consider the distance which the target has to cover before the bullets arrive and bear this in mind when taking aim. Take your sights not on the target itself, but on a point slightly in front of it. The faster the target is moving, the further you have to aim in front of it. This is known as deflection shooting. Once you have grasped the underlying principle, a little practice should help you to use this technique to good use.

4.3. Defensive Maneuvers

"...by the way, did you know that the Russian Rata could outmaneuver the Me 109?"

Joseph Jacobs, Commander of the Jasta7 in Flanders in the First World War.
Quote from: Sims, Edward H.: Fighter Tactics And Strategy 1944

Now that you've read so much about all the lovely damage you can do, it's about time we told you that you're likely to find yourself in at least as many situations in which the enemy has got his sights trained on you! All is not lost, however—read on to find out how you can get yourself out of the tightest of corners, maybe even turn things to your advantage!



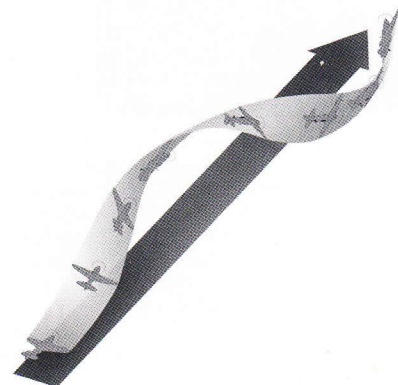
...to help you escape an enemy who is following you by flying in a tight spiral. The enemy will have to follow you in the same spiral, otherwise he will be left behind you or above you. A barrel roll may enable you to tuck in behind him and turn the tables! ...roll the stick to whichever side you wish and pull back on it slightly. Your plane will start flying a long, narrow spiral. Keep following this route until your opponent flies past you. Of course, that's what we hope he'll do. If he manages to stick on your tail, you'll have to think of another defensive maneuver to help you get rid of him and his unwanted attention.

...pulling full rudder, in the same or opposite direction, during a barrel roll to make it even more unpredictable.



Quite apart from the fact that it's always better to avoid getting into risky situations in the first place, any self-respecting pilot should be able to carry out this maneuver in his or her sleep. Fortunately it is really quite simple to perform, as a break is basically just a very tight turn. Use this maneuver if the enemy is right behind you.

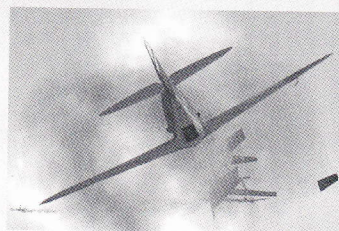
...to perform this maneuver, roll your plane through 90 degrees to whichever side you wish and pull the stick toward you. You can also gently use the rudder and cut back slightly to make the turn even tighter. If your plane is particularly maneuverable, you can roll out of your pursuer, as he will have to be at the controls of an even more nimble plane to get himself into a good shooting position. But be prepared to carry out a series of breaks to shake off your would-be assailant, as one simple break alone is not enough. Only the most suicidal pilot would perform a series of breaks in the same direction. Rolling from one direction to the other may take a few seconds, but your plane will be flying almost straight and level—enough for the attacker to lose any positional advantage he may have lost during your first break turn.



If you are going against enemy bombers, you must trade off surprise for speed. If good is coming in unnoticed when you gave the enemy time to drop bombs, what is your primary objective?

If you are thinking of attacking enemy fighters, or other planes that present a direct danger to friendly forces, you can take your time and position yourself for a kill.

Destroying your Target



This is the most difficult part of air combat. Even the most qualified marksmen can miss a target while lying on a ground with a rifle. Now imagine firing at a small moving target hundreds of meters away. Both you and the target are flying at several hundred meters per hour. It's not impossible, but it's very hard.

Many young pilots return from their first missions with empty ammo stores, but they claim a kill. Only constant practice and utmost confidence can help you score a combat kill.

Getting Out

The success of this task largely depends on how well you fared in the previous three.

If you missed some enemy targets in the first stage, you risk getting shot out of the sky by an unseen opponent. If you came in clumsily and ended up in the middle of enemy formation, you're as good as dead. And, well, if you missed your target when you fired at it—you have one more angry pilot to run away from.



Summary:

Survival is more important to a pilot than gunnery.

Remember: wonder moves in the world are of no use if you can't get a kill. All that matters in combat is being able to get in quickly, and get out even more quickly.

Don't destroy your target, you're no good as a fighter pilot.

Always look for the enemy!

Remember: you can never see your victor! Whether you're by yourself or with others, never stop looking around!

Protect your Wingmen!

Remember: you do, destruction of enemy aircraft is always secondary to protecting your wingmen. No enemy target is as important as the life of your fellow pilot!

Destroying your Target

This task has two main segments within this task: maneuvering for the kill and actually destroying the enemy down.

Maneuvering for the kill has been a subject of a great many books; we cannot explain it in sufficient detail within this manual. However, the main principles remain simple: you must bear your guns on your target long enough to achieve total destruction.

Remember: in actual combat, anything goes and you should never hesitate to **act on your hunch**, however unconventional it may be.

Chances were invented by the pilots in the heat of the dogfight. A fighter pilot who loses everything by the book becomes predictable, and therefore vulnerable.

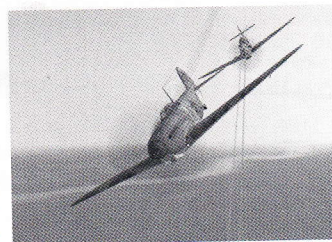
Always use your brains, and always improvise!

Aerial Gunnery

There are many factors that work against you when you fire. First of all, your bullets don't fly in a perfect straight line. Your plane is shaking in the air, your guns recoil and twist, Earth's gravity pulls the bullets toward the ground, and the thick air slows them down. All of those things combine to create something called "bullet dispersion."

A bullet stream from one machine gun at 50 meters will fit into an area fifty times as small as the same bullet stream at 500 meters. This makes long-range fire extremely difficult.

Keep in mind that bullets lose power over distance. Using the same example, a bullet at 50 meters can puncture light to medium armor, but at 500 meters it may even bounce off human skin.



Most targets you encounter will be armored. Some planes have armor strong enough to make it impossible to cover all aspects of aerial combat in a book, however, to reflect any bullets or shells you fire; your ammunition will harmlessly bounce off. We will not attempt to do that; rather, we'll show some common sit- target without doing any damage.

However, no airplane has the same thick armor all over. Even the best armored airplane has some weak spots, where just a few hits are enough to bring it down.

Gunnery Practice Suggestions

- ★ Set up flights of friendly bombers in the Quick Mission Builder. The larger your target, the better. The Pe-8 from the Soviet side is a great gunnery target, and the He 111 or Ju 52 make great German targets.
- ★ Slow the game down with the [] key when you're getting ready to fire. This is very helpful in learning to aim and maneuver.
- ★ After you find yourself hitting your targets easily in the exercise above, set up some large targets as Hostile. Try shooting them down as they take evasive actions and fire back at you.
- ★ Only after you're sure to destroy an enemy bomber, should you try to go after fighters. It takes a great deal of skill, patience and determination to shoot down an enemy fighter.
- ★ Review the track of your flight afterwards. Analyze your performance, find mistakes and correct them in your next mission.



Know your Enemy's Weak Spots

Learn about the capabilities of all enemy planes: blind spots, defensive fire arcs, and performance relative to your aircraft. Only by wisely positioning yourself to use your strengths against enemy's weaknesses can you be most effective in combat.

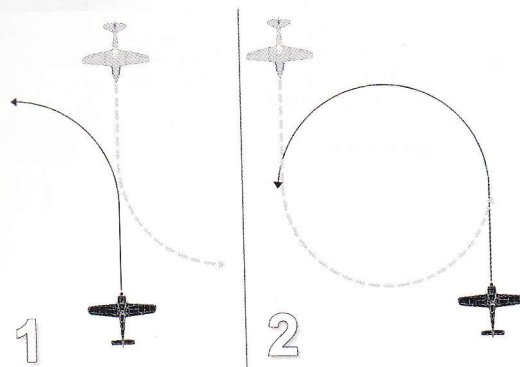
When You Think You're Too Close—Get Even Closer!

Bullet dispersion and power loss mean that long-range shots are ineffective unless you're very lucky. Press the trigger only when sure to hit your target with every bullet in the burst! Since that is only possible from point-blank range, open fire when your target fills your whole windscreen.

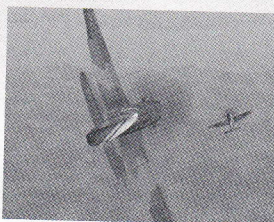
Practice!

If only these principles could guarantee you a kill every time you press the trigger. Unfortunately, it isn't so. Prepare to miss often.

Only by dedication and taking a steady, structured approach to training can you become a true ace.



We therefore recommend the following approach path: fly straight toward your opponent. When you're about three or four firing ranges away, quickly break away and turn back on a path parallel to your enemy's. This flight path separation does not only need to be horizontal; it can be in altitude or both.



A lead turn will increase your chances of winning. Unlike in the first diagram above, a lead turn means turning before you pass your opponent. If you turn correctly, this can get you on your opponent's tail a little as half a turn circle.

After the first pass, everything's up to your opponent's skill! Know your plane's capabilities and respect your adversary. If your plane turns better than the enemy's, follow him in a turn and try to bring him down.

with him as soon as you can. Anything goes: chop your throttle, drop your tail section, and then dive down with your guns blazing!

If your plane is faster than the enemy's, climb away from him to where he cannot follow you, and then dive down with your guns blazing!

★ Speed is life.

There is no more important principle in combat than this one.

★ Your first burst should be your only burst.

"Spray and pray" will only amuse your opponent. Make every shot count!

★ Always Watch Out!

Where there's one enemy, there's always more nearby! When you're lining up that perfect pass, look behind you and check for your target's wingman.

What to Do in the Case of Damage

"The anti-aircraft guns fired at us fiercely from all directions, and suddenly I felt our aircraft hit. My left foot slipped down into an empty space below me, the bottom of the cockpit had been shot away. I felt something hot streaming down my left arm and I was wounded. Blinded by the searchlights, I could discern nothing in the cockpit. I could feel moisture spraying inside the cockpit; the fuel tank had been hit. I was completely disorientated; the sky and earth were indistinguishable to my vision. But far in the distance I could see the sparkle of our regimental runway floodlight, and it helped restore my orientation. An air wave lifted us, and I managed to glide back over the runway to the neutral zone, where I landed the aircraft in darkness."

Nina Raspopova, 46th guards bomber regiment
in: Noggle, Anne (1994): A Dance With Death. Texas A&M University Press



it should happen—you will be hit by enemy fire. Your plane will be damaged, machine guns or cannons (unless, of course, you've activated the armor plating in the Difficulty settings menu). You will notice that maybe the steering is not working properly, that the engine sounds strange or maybe you'll even see smoke coming from the armor plating in front of you. There is quite a high probability that at any moment, your engine could stop, burst into flames or explode. What can you do? Well, that depends...

What you should do is to get a clear idea of how serious the damage actually is. It goes without saying that this analysis has to be done as quickly as an enemy fighter may be right behind you and moving itself toward you. If this is the case, then you have, unfortunately, already made the serious mistake of not paying attention! Try to escape your pursuer with defensive maneuvers that your plane allows. Perhaps you can swerve your way out of danger and bring your opponent down.

When you take, you should make certain that you pay close attention to your instruments, in particular to the displays for oil pressure, engine temperature and fuel level. What do these displays tell you? Is the engine temperature rising? If so, the engine will give up the ghost at any moment. Hopefully you are still flying at an adequate altitude. Cut back on the throttle to take the pressure off the engine a little and try to find a suitable place to make an emergency landing or to make preparations for bail out. Cut out all the stops in trying to get back to base. Good luck!

Since a hit can only be controlled with difficulty, this suggests a hit in the hydraulics or possibly that the wires of the steering mechanisms have been damaged. The aircraft surfaces themselves may also be damaged. Try setting course for your home airfield. You can forget about combat for the time being, but you might just make it back safely. Be careful, because if you end up stalling you may not be in a position to bail out about it.

He bailed out with a parachute on two occasions, once during training, and I performed sixteen emergency landings, but not once was I hit by an enemy fighter.

Erich Hartmann

Quote from: Sims, Edward H.: Fighter Tactics And Strategy 1914-1970.



If you have managed to make it back in a plane which has taken something like a beating, you must make sure that your landing gear is still working before you attempt to land. Pay attention to the monitoring lights and switch to an alternate landing gear via F2 if necessary. If the landing gear cannot be lowered automatically, you will be able to do this manually. Make sure that you are familiar with the appropriate controls (see chapter 6). The landing flaps may also be damaged. If this is the case you will have to land down at higher speed—be careful!

V. BEFORE YOU START

Here you will find a brief list of options in the main menu. The most important ones are:

Pilot Roster

Here you can create (or choose) your pilot for further missions in different modes of the game.

Single Mission

This is "single mission" mode for a mission that does not imply career growth.

Pilot Career

Campaign mode. In this mode your hero accomplishes one task after another, keeps his battle statistics, and his equipment changes over to new equipment, and receives various awards. In a word—he fights.

Multiplay

Multiplay mode

Quick Mission Builder

"Quick" generator of random missions. We shall take a closer look at the way it operates below.

Full Mission Builder

Mission editor. It creates missions as well, just like the "Quick" generator, but here the user controls the entire process of mission creation. It is a more complicated instrument, but also a more powerful one. Please see special section explaining how to use it.

Training

Missions for beginners.

Play Track

"IL-2" enables you to create tracks. In other words, you can record something that you accomplished while fulfilling your task in the game. This menu option correspondingly plays back these tracks.

View Objects

Here you can take a close look at all 3D objects modeled in the game and find detailed information on the fighting capabilities of military equipment.

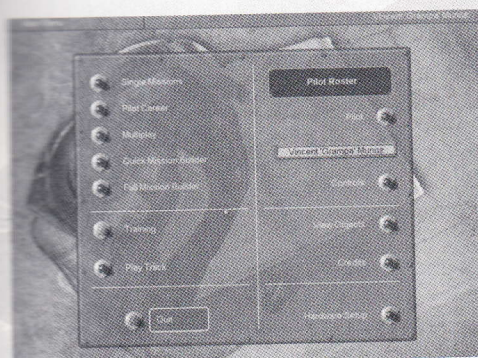
Controls

Here you can reassign control buttons and create your own configuration.

Here you can adjust the settings pertaining to your hardware. This option is also used for choosing the optimal solution while determining the rate of program operation and detail of the reproduced 3D image.

Includes various realism-related settings. It should be pointed out that the level of complete realism in this flight sim can become a problem for beginners. Even the fans are divided on the item—what some of them think quite appropriate is deemed downright unfair and unrealistic by the others.

Quitting the game; sometimes it is necessary



you can consider each menu item in more detail.

VI. PILOT ROSTER

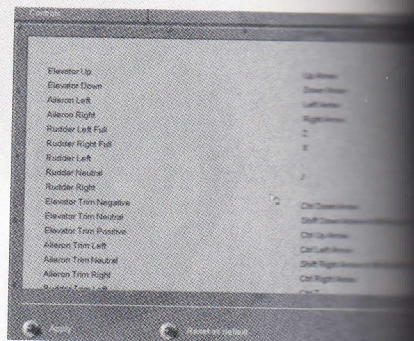
Simultaneously store information on several virtual pilots. The process starts by clicking the Create button, which results in a new entry in the list of personal files. All you have to do is enter a full name and call-sign by clicking in the corresponding fields. The process is completed when you have chosen one pilot out of all those recorded. To do this, click on the corresponding entry and press the "Select" button. After that, you will be returned to the main menu where the pilot chosen has already appeared in a small indicator. In doing this, all individual control settings are preserved.



VII. CONTROLS

Key control panels available in a separate document.

As was already mentioned, this is a reassignment of the controls. Having chosen the "Controls" item, you access a long menu that can be scrolled through using the slider on the right. The left of the menu is taken up by a list of actions you perform (e.g. "release the chassis"); the button initiating the action is indicated on the right (in this case it is "G"). If for some reason you find that you are not satisfied with the



default settings, you should click on the field where the button is indicated. The button will subsequently be surrounded by a gray frame and you will only have to press the button (or alternatively a mouse/joystick button), which you want to see in this place.

You might decide that the previous settings were better. We have devised a "reset to default" button for this purpose, which immediately returns the configuration to the "by default" status.

To adjust **HOTAS** controls, perform the actions described above with only one exception: after you have clicked on the axis you want to assign for your **HOTAS** mouse device meant for it slightly in the corresponding direction.

If you want to quit the menu, press the "Apply" button. All changes made will be activated immediately.

Additional in-game Joystick Settings.

Find and press the Hardware setup button in the game's Main Menu. You are then in the hardware setup menu. Press the **Input** button. Here you can set up the following features for your joystick:

...to set a dead zone where any small movements of the stick will be ignored, almost equaling zero. This feature can be helpful if you are playing the simulator for the first time or have the old type of joystick. If you are an experienced flight simulator, we strongly recommend that you set Dead Band in the menu or very close to the left position.

...to allow you to set a digitized filter if your joystick has problems with inadequate resolution.

...to select basic joystick axes and change their profiles by fine-tuning in the menu. This can be used to adjust the stick reaction curve. Some joysticks need fine-tuning to work correctly with our default settings. You can select the axis for the reaction in the left combo-box.

...to enable or disable the Force Feedback feature, set the Force Feedback switch to the "On" position.

...to find that our initial settings were more appropriate before your changes, press the Default button. All the settings will subsequently be set back to default.

...to press Back to quit this menu. In this case any changes made will be applied automatically.

VIII. VIEW OBJECTS

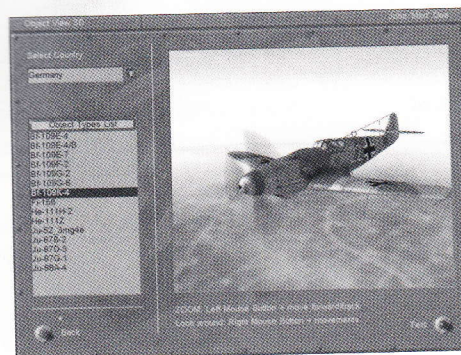
...to view a list of 3D objects in the game. When you choose this menu, you immediately see the next one where all the objects are divided into classes.

All aircraft.

Not tanks alone, but those with self-propelled artillery mountings or SAU included.

Ships, cutters and submarines placed above the water.

Towed vehicles and artillery. The list includes mobile rocket launchers—our "Katushas."



XII. PILOT CAREER (Campaign mode)

Before you embark on your pilot career, here is a historical overview of the main great battles modeled in the game.

On 18 December 1940, Hitler ordered that preparations be made for the "Operation Barbarossa," as the battle for "lebensraum" (living space) in Eastern Europe came to be known. After the lightning victory ("Blitzkrieg") over France, there was a mous euphoria in Germany over the "greatest warlord of all time." The German was now in control of the continent from the North Pole to the Spanish border. He was not to be halted, and in the future he was to become more and more involved in the operational leadership of the "Wehrmacht" (German armed forces). The campaign in Russia was planned as a war of annihilation from the very beginning. As Hitler said in a discussion with the Chief of Staff of the Wehrmacht High Command, Albert Kesselring: "The coming campaign is more than merely a battle of arms; it will become a battle between two different philosophies." Hitler also stated that the war was to be waged with uncompromising severity—according to one order, Soviet volunteers were to be liquidated "mercilessly," regardless of whether they were in combat or trying to run away.

On June 22, 1941, the German armed forces entered the Soviet Union, thus breaking the German-Soviet non aggression pact which Hitler and Stalin had signed on August 23, 1939. National Socialist propaganda declared that the Russian campaign was "in defense of Europe against Bolshevism" and hoped for another lightning victory—Hitler planned to conquer Russia in its entirety in only eight weeks. The army was divided into three groups—one to capture Leningrad, which would then in turn join forces with the second group in an assault on Moscow. The third group was to march toward Kiev in order to gain control of the oil fields in the south. Many historians consider Hitler's insistence on splitting forces into three relatively weak army groups a first step to Germany's ultimate defeat. The German Luftwaffe had a decisive part to play in this plan, destroying many Soviet aircraft before they even got off the ground. Nevertheless, the initial successes of the Luftwaffe could not hide the fact that it was not equipped for a long-running battle. Over-hasty mass production of machines that had hardly been tested and the adaptation and misuse of proven models meant that many promising aircraft were not used to their full potential.



Germany marched in with over three million soldiers, including 75 percent of the Luftwaffe. The invading forces counted no less than 1,900 aircraft, including 19 of the total 21 tank divisions. There were 600,000 vehicles, 3,580 tanks, 7,184 guns and 1,830 aircraft. The Soviet forces were represented at the European theater by 2.5 million soldiers.

The Soviet Union was not prepared for the German assault and had played down all the obvious signs that an attack was likely, treating them as "mere provocation." The Fascist "monstrous cannibal" had attacked caught him by surprise, but it was however not a surprise for many Soviet commanders, including some in the high command. An order was issued just a few hours before the invasion, warning front line commanders about imminent "provocation attempts." The message reached its recipients in time.

Although the Germans soon captured Smolensk and Kiev, attacked Leningrad and took 1.5 million prisoners of war, the Soviet Union as a whole refused to capitulate by the time winter arrived. The non aggression pact between the Soviet Union and Japan enabled Stalin to call on reinforcements from the east. Not only that, but the Soviets succeeded in evacuating over 1,500 prisoners and around 10 million civilians to the east. Hitler had not expected an attack of this scale at all. Moreover, the German troops, ill-equipped for the harsh winter at the Eastern Front and stretched to their limits, were finding it more difficult to organize supplies. Hitler had completely underestimated the strength and might of the Soviet forces, their strength in numbers and the potential of their armaments.

Hitler rejected the advice of his army's High Command to pool the German forces and march on toward Moscow. Instead he ordered the capture of Leningrad and the Ukraine. The first German troops did not reach the outskirts of Leningrad until October 2, 1941, and Hitler instructed them to hold position. His Chief of Staff, Erich von Brauchitsch advised the withdrawal of troops to more favorable positions, but Hitler again remained firm, showing no hesitation in taking overall command of the army himself. The notion of a speedy victory was thus dispelled.

Initially, the Germans succeeded in capturing parts of the Soviet supply areas, but this did not lead to a decision in the Caucasus or in Stalingrad during the offensive in the summer of 1942. The German sixth army was surrounded on September 10, 1942, at Stalingrad and surrendered on January 31, 1943. Between 1942 and 1943, the German Wehrmacht lost almost a million soldiers. Stalin, Roosevelt and Churchill held a summit in Yalta to discuss their post-war policies and hopes for achieving a "just and lasting peace." The Red Army captured Berlin and Germany committed suicide. On May 8, 1945, Germany capitulated, thus putting an end to the war in Europe.



1941: Smolensk

The First German Victories –The Battles of Smolensk and Kiev

"The Russians didn't show the same amount of initiative as the enemy on the Western Front. But the elite units of the Red Guard really were very good. Their aircraft were painted in red right up to the cockpit and their pilots had a real taste for battles on the turn. Our Me 109s were better at high altitudes than the Russians, who then became prisoners of war after the battle came to an end in one day, but by the next day there were just as many there again."

Quote from: Sims, Edward H., *Fighter Tactics And Strategy*, 1941



The first major encirclement of Soviet forces took place in the area around Bialystok-Minsk. Hitler already knew that the ring with which the Soviet troops had been surrounded was too large and therefore wanted to break it. At this stage, members of his staff were still able to get the message through. Their tactics proved to be successful once Minsk had been captured. The German Command were able to register the following successes: 400,000 prisoners of war and 600 guns had been captured, 2,233 tanks and 4,107 planes had been destroyed, all at a cost of only 150 German aircraft losses. The sheer numbers given should have provided clear indication of the enormous military strength in the Soviet Union as a whole, but Colonel General Franz Halder was already predicting that the campaign would be won in two weeks' time.

After the first major battle of encirclement at Bialystok and Minsk, the central army group advanced from the north toward Smolensk, "the gateway to Russia," and the Second Panzer Group made its way from the south in an attempt to encircle the Soviet troops at the city's western front in a pincer movement. The troops then planned to advance toward Moscow in a concentric tank wedge. Meanwhile, the Soviet High Command in the Smolensk area was pulling 42 divisions together to prevent the German troops from getting any further toward Moscow, which was around 400 kilometers away. The defensive maneuver ended in failure as the mobile German troops succeeded in breaking through the Red Army's defensive strongholds of the Dniepr crossings Mogilev and Orsha south-west of Moscow. After heavy street battles, the city fell into German hands on July 16, 1941.



...the blazing summer sun and the huge dust clouds which hampered their movements, the 2nd and 3rd Panzer Groups and the infantry divisions of the Army managed to trap 15 Soviet divisions of the Second Army by July 24. At Smolensk and Orsha, the Red Army lost around 3,000 tanks and over 100,000 soldiers, who then became prisoners of war after the battle came to an end. In the summer of 1941, the German military leadership found itself in a severe crisis. General von Brauchitsch, Commander-in-Chief of the Army, and Chief of the Army Staff, General Halder, pleaded for a swift advance by the central army group toward Moscow. On the other hand, favored conquering the Ukraine first, pointing to the vast grain and raw material deposits were of immense strategic importance for Germany. Halder got his way and ordered units of the Second Army to proceed to the south.

The First Army of the central army group first succeeded in capturing Gomel and then the city of Zhitomir. The Second Army group captured the bridgehead at Kremenchuk, creating a bridgehead from which to advance northwards to Kiev, 250 kilometers away. Together with the First Army, they formed five armies of the Soviet southern front in a pincer movement. At the end of August, the Sixth Army under the command of Field Marshal Walter von Reichenau was brought under German command. The ring was closed and Kiev was brought under German control. On September 8, the fighter squadron 51 (JG 51) commanded by Werner Kesselring announced air victory number 2000. The battle of encirclement in the east of Ukraine continued until September 26 and led to the surrender of 665,000 Soviet soldiers. The Germans also seized over 880 tanks and 3,700 guns. The morale in the army was low and the Wehrmacht's High Command had every hope that they would be able to advance into the Caucasus before the onset of winter.

1941: Moscow

"Operation Typhoon": The March to Moscow

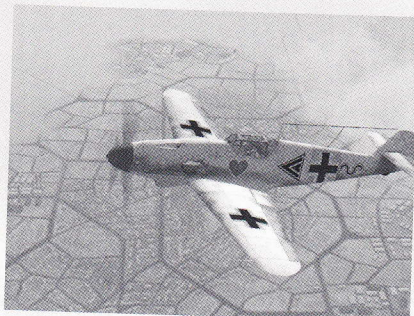
"With a combat mission is not a trip under the moon. Every attack, every bomb-throwing is a dance with death."

Serafima Amsova-Taranenko

in: Noggle, Ann (1994): *A Dance with Death*. Texas A&M University Press

October 2, 1941: The mild Autumn weather was still kind to the German troops—"Operation Typhoon" could begin. On the evening of October 3 the tanks of General Heinz Guderian surprisingly took control of Orel at the Oka River, thus cutting off the rail connection between Moscow and Kharkov. At the same time, the Sixth Army under Field Marshal Walter von Reichenau was marching on Kharkov. In the Vyasma area, German troops trapped Moscow's defenders in their pincer attack—yet another battle of encirclement was underway.





With the support of the German Luftwaffe, the units of the 4th Panzer Group were to start off by capturing Klin, then turn to the south through the great Moscow-Leningrad highway. The German troops were gradually moving forward. Meanwhile, the members of the concrete bunkers, anti-aircraft batteries and stationary batteries—*not to mention the batteries*—not to mention the batteries of the German Reich, Italy, Japan and Manchuria extended their pact for an additional five years; Bulgaria, Romania, Slovakia and China also joined the pact, giving German troops also the confidence to declare the "Bolshevist colossus" already in ruins. At this stage, the German troops were still about 30 kilometers from the Russian capital.

The Red Army launched its first major counter-offensive at Rostov. The river Nara to the east of Moscow was destroyed. The German troops evacuated the town and General Field Marshal Gerd von Rundstedt should be allowed to retreat, but Hitler had no intention of agreeing to this. This spelled Von Rundstedt's departure, and Hitler replaced him with Field Marshal Hermann von Reichenau.

So far so good, as far as the German troops were concerned—until the first signs of winter came, that is. These first signs of the bitterly cold Russian winter were followed by a natural obstacle in the shape of mud. The German advance soon ran into difficulties not only due to the absence of warm winter clothing, but also because the fuel fell victim to the elements, plunging the campaign into a transport crisis. The rail system provided an additional burden—the Germans first had to adapt the tracks to German standards—Russian tracks were too narrow for German standards.

On October 16 the Germans, now with help from the fourth Romanian Army, took 100,000 Red Army soldiers prisoner. Just one day later, the battle of encirclement at Vyasma-Bryansk came to an end. The Wehrmacht High Command was able to declare the following as either destroyed or vanquished: six artillery divisions, six cavalry, seven tank divisions and six tank brigades! To the south, the Germans captured Stalino in the Donez basin, taking the number of Soviet divisions destroyed up to 300. Nevertheless, the Russians kept on coming back with their guns—as well as the superb T-34 tank and the Katyusha rocket launcher known as the "Stalin's organ" were being used more and more frequently.

October 29, 1941: The attempt to capture Tula, approximately 80 km outside Moscow, ended in failure. The German tanks came under heavy fire from the anti-aircraft defenses and flak guns around four kilometers away from the city boundary. Captured the city from the other direction also failed, which was no wonder given the fact that the 4th Panzer Group was literally stuck in the mud at the Moscow marshes and at the Smolensk-Moscow ridge.

Between November 6 and 12, 1941, the muddy period was drawing to an end and being replaced by frost on all fronts. To begin with, this allowed the German troops to resume their assault, but it was only a matter of time until the merciless Russian winter seized the Germans in its icy grip.

Stalin now made the decision to send Siberian and Cossack divisions into battle, using the fact that to his advantage these troops were more than prepared for the harshness of the elements. The scene was now set for the final battle for the second Moscow defense position.



1942: Stalingrad

Bitter hand-to-hand fighting in a city under siege

If there was one thing that the two arch enemies agreed upon, it was that the winners of the battle of Stalingrad would also emerge victorious in the battle for Russia. The battle of encirclement at Stalingrad, logistically the most important center in the Caucasus and, with its tank factories, the industrial heart of Russia, was a human and material battle the like of which had never been seen before. The trench and positional warfare that marked the battle of Stalingrad led Russian propaganda of the time to speak of the conflict as a "Russian Verdun."



Attention, Bombers! I'm back!
Bomber
The machine. Bomber. Bomber off next
from the ground. Bomber. Bomber.

The Sixth Army, Hitler's elite troops under the leadership of General Friedrich Paulus (who was eventually promoted to Field Marshal later), were the main combat force in this, the biggest battle of the Eastern campaign. They were supported by sections of the 4th Panzer Army who had arrived from the south.

August 10, 1942: The first waves of German troops broke through as far as the districts of Stalingrad. Nine days later, Paulus ordered the attack. On August 23, the German attack troops reached the banks of the Volga supported in their quest by the aircraft of the VIII Air Corps of General Martin Fiebig. By October, they had managed to capture 90% of the city. The battle was by no means over, though—the ruins of the city provided an ideal hiding place for Soviet sharpshooters, and many machine gun positions were tucked away in its dark alleys. The conflict was becoming more and more brutal, some, the soldiers battling it out with bayonets, rifle butts and even spades as the German forces launched attack.

The enormous psychological burden was compounded by worries over reinforcements and the cruel Russian winter. As early as September, General Paulus tried to persuade Hitler that Stalingrad could not be conquered. "I cannot change this, it goes beyond the means of human strength," yet Hitler stuck to his guns and his officers refused to give up. They motivated their men to their limits—and beyond. By the middle of October, the German troops had occupied the whole of north Stalingrad.

Nevertheless, fresh waves of Soviet troops were already preparing themselves for "Operation Uranus." Paulus pleaded with Hitler to allow the German troops to retreat, but to no avail. On November 19, 1942, the Red Army attacked as anticipated. Soviet soldiers encircled the German troops from the north and the south, absolutely determined to force the Germans to surrender. 300,000 men were thus trapped in Stalingrad. Hitler ordered them to hold position and promised sufficient help from the air. General Paulus happily agreed, his faith in the Führer's promise not faltering for a moment.



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...which Hitler had great difficulty in keeping, as not only did the Luftwaffe have an insufficient number of planes, the aircraft which they did have were weakened by the strength of Russian anti-aircraft defenses. Air fleet 4 did not, however. Transport planes from Tunis and Sicily were called up and sent to winter conditions as quickly as possible. By December, about 100 He 111 bombers with empty bomb compartments had been converted into transports. By January 1943, the number had grown to 467 aircraft in all. They demanded 700 tons of supply per day, every day. The Luftwaffe at this stage was completely discounting any Soviet opposition.

As the winter was tightening their grip on the city and the German troops were fast running out of food and ammunition. At temperatures of up to 40 degrees below zero, the siege as best they could. In the words of one officer: "At the end we realized that we did not even have the strength to stand at our machine guns. We had to shoot. In any case, we only fired if we really had to, we were afraid of blowing our cover."

On December 12, German LVII Panzer Corps set off toward Stalingrad to liberate their comrades. But "Operation Winter Storm" was a failure and the tank units gave up, leaving the Sixth Army under siege and without reinforcements. The situation was becoming more and more hopeless, and the German troops froze to death or died in battle. The troops in the Kette were not made aware of the resupply failure. Besieged Germans kept listening for distant engine sounds hoping for the liberating SS Panzers for many months to come.

On January 21, Paulus radioed the Führer's headquarters with the following message: "Without ammunition or food. Signs of disintegration on the southern and northern and western fronts. 18,000 wounded without the most basic necessities or medicine. Front broken up in many places due to major setbacks. Further defense pointless. Army requests permission to surrender in order to save lives." A little later, the Gumrak airfield also fell into Russian hands and any hope of supplies. On January 31, Paulus and his officers surrendered to the Red Army.

Between November 24, 1942, and January 31, 1943, 488 aircraft along with 1,000 men were lost in supplying Stalingrad alone. This amounted to five squadrons—more than an entire flying corps. Of the 300,000 German soldiers who had set off to capture Stalingrad, 145,000 died. 45,000 troops, some wounded, some essential specialists, were taken out in time. 90,000 more were taken prisoner by the Russians. Years later only 6,000 of these returned home.

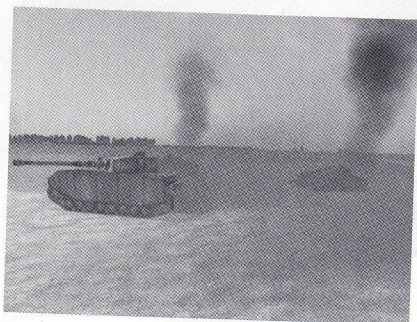


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1943: Kursk

"Operation Citadel"—the tank battles at Kursk

"I came up against the IL-2 at the Eastern Front. We got a message that our fighters were in the area. Our squadron leader led the way, and I then saw a slow-moving IL-2s. I was flying a Bf-109 G. My squadron leader gave me the instruction with the words "I hope your teeth are still in good condition" and what he meant by that exactly—well, I soon found out, because I used up all my cannon ammo. All the IL-2 planes were destroyed, a total of about eight planes.



(Interview, November 1993)

On April 15, 1943, Hitler gave the order for "Operation Citadel" as a pincer attack on the Kursk bulge. It was to become the biggest tank battle of the Second World War. The German front in the Kursk area, which had advanced 100 kilometers to the west, was to be encircled by the central and southern army groups and the Army troops there destroyed in the second stage of the operation, which planned that the army groups should then advance into the depths of Russia.

The Soviet High Command had gotten wind of Hitler's plans and had decided as March to fend off the German attack and then to go on the offensive. Within months the Red Army set up eight strongly consolidated and mined lines of defense running to a total depth of no less than 300 kilometers. In the main defense strip 434,667 tank mines and 7,000 kilometers of wire obstacles were laid.

The 900,000 soldiers of the German Wehrmacht were faced with 1,337,000 Red troops. The 10,000 German guns were up against 19,300 on the other side. The Germans had 2,700 tanks and submachine guns at their disposal, the Russians 2,650 to 2,000. The Messerschmitt Bf 109 G fighter plane was one of the most powerful models now available with its new, powerful 1,700 hp Daimler-Benz engine.

The Focke-Wulf FW 190 was also a major presence at Kursk. The eighth flying wing included 68 ground attack aircraft of the Hs 129 model, whose weaponry was useful for anti-tank combat—hence their nickname "flying can openers."

It was plain to see that the Russian side was far stronger, even disregarding the 573,000 soldiers, 7,401 guns and 1,551 tanks and self-propelled weapons at the Steppe Front. In addition, the German panzer division had already incurred serious losses in terms of men and materials. Hitler put his trust in the introduction of new tank models such as the "Panther," "Tiger" and "Elefant." Yet his favorite, the "Panther" was not yet considered ready for action as it had not been tested adequately. So the German position coming into "Operation Citadel" could hardly have been worse. In spite of this, early in the morning of July 5, 1943, panzer, panzer grenadier and infantry divisions of the Central and Southern army groups embarked on the operation, which was fought out bitterly on both sides.



...less 4 and 6 started off by attacking the hinterland and then focused their efforts on clearing a path for their tanks. The Germans were to have control of the heights of Ponyri and Teploye ended in failure. The Red Army succeeded in taking a heavily fortified key position at Oboyan in the south, but the number of German tanks was decreasing by the day, and General Model's assessment of tanks was of little real use. To top it all, the Red Army drew on the news of the Soviets' partial attacks in the Orel bulge reached Model. One day later, the Soviets went on to the offensive and plunged the second stage into a deep crisis. Model had to put a stop to his attacks in order to bolster his defenses in the Orel bulge and to prevent the worst from happening.

The tactical picture of the whole operation—the Wehrmacht was only able to form attack on the narrow sections of the front and in brief bursts, whilst at the same time other sections were held. What made life difficult for the German troops was not only that they were outnumbered by the Soviets, but the means at their disposal were inadequate and fighting on unknown terrain with poor roads. Under these circumstances it was a wonder that morale was slipping by the day.

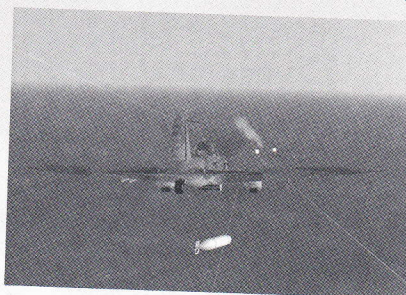
The tank battle at Prochorovka on July 12, 1943, was undoubtedly the most significant of the Kursk battles. 850 Russian and 500 German tanks met, quite unexpectedly for both sides, on the narrowest of battlefields. The Russian counteroffensive began at Belgorod and Kharkov, the double battle between Mius to win back the Donetsk basin began on July 17. On August 3, the German offensive, was lost. As the battles mounted up, the might of the Red Army, whilst at the same time the German tanks and weapons grew weaker and the withdrawal began at the beginning of September—the Soviet troops had won the victory.

Looking back, the battle in the Kursk bulge is often seen as one huge tank conflict, but it was not the case. The conflict should, instead, be seen as a series of individual battles and operations. Opinions also differ strongly over the length of the battle. The Germans speak of 50 days, the Germans on the other hand talk of no more than nine. Numbers of losses on both sides are also a matter of debate. The Russians lay claim to having destroyed 4,605 German armored vehicles and to having captured 521, but the Russian figure of "Tigers" destroyed in the Kursk bulge (146) greatly exceeds the number of these tanks actually deployed by the Germans. Germany reported a total loss of 14 "Tiger 1" tanks. It is extremely difficult, if not impossible to track down reliable figures on Soviet losses, as the USSR was always extremely reluctant to have its military strength questioned. One thing is for sure, however, the personnel and also material losses of the Red Army far exceeded those of the Germans.



1944: The Crimea

From the War in the Crimea to the Red Army's March into Berlin



The Ukraine had already been cut off since November 1941, supplied via the sea route, was defending the isolated bases in Crimea. Hitler was furious and the two army High Commanders, General Field Marshal Erwin Manstein and General Field Marshal Ewald von Kleist, who were dismissed to the "second division" of German military leaders.

The 4th Ukrainian Front commenced its dual offensive in April 1944 with the aim of recapturing Sevastopol. On May 9, the Russians regained Sevastopol. The Black Sea Vice Admiral Brinkmann and "Sea Commander Crimea" Rear Admiral G. G. Gerasimov ordered the evacuation far too late, and coastal batteries blew up their guns on the voyage to Romania.

This was followed by a break in fighting. On June 22, 1944, the skies were filled with a mighty cacophony: hundreds of bombers and fighter planes were pounding German artillery positions, and thousands of "Stalin's Organs" filled the air with their roaring. The Red Army's breakthrough at Vitebsk split apart the 3rd Army Front and sent it into two parts, making all attempts at escape futile.

The Russian tank units continued with their advance and the gateway on Belarus was wide open as vast gaps in the Front appeared. Once the Fronts had been penetrated, the Russian advance came up against very little opposition. Nevertheless, Hitler stuck on to his insistence on defending German lines even though he had already lost sight of his overview of what was happening. Yet even he soon realized that he was no longer in a position to lead, but instead merely to patch things up at the edges.

To add insult to injury, in July 1944, 50,000 German prisoners of war were marched through the streets of Moscow as evidence of the victory over the "fascist German forces of occupation."

By July 1944, the Soviet troops had advanced as far as the Vistula. Despite this, Hitler took additional defense measures in September, calling on all men between 16 and 45 to join the so-called "Volkssturm," or German Territorial Army. They were given a crash course in operating bazookas as German cities were fortified. Every man available had to join up or face the death penalty. Meanwhile, the Soviet advance continued relentlessly, and the first Soviet troops made it into East Prussia in October.

Both German and Soviet high command regarded the Crimean peninsula as an important tactical objective, while in reality it may not have been. In his decision to defend Crimea, Hitler pointed out its importance as a potential staging point of air attacks against Romanian oil fields—but Soviet tanks were already advancing toward those fields in Romania itself! The main objectives of the war lay far away from Crimea. It was nevertheless a sore spot on both sides' maps, and both committed to full-out war there with tremendous personnel losses. The gain to these losses is questionable at best, especially for the Germans.



1945: Berlin



When Soviet and American soldiers shook hands at Torgau on the river Elbe on April 25, 1945, the symbolic effect was clear—it was only a matter of time until the end of the war in Europe. The Red Army had already made it as far as the center of Berlin, and Adolf Hitler committed suicide on April 30. He had nominated Grand Admiral Karl Dönitz as his successor, who planned to offer a partial surrender to the western forces. Dönitz hoped that the Germans would then be able to continue the battle against

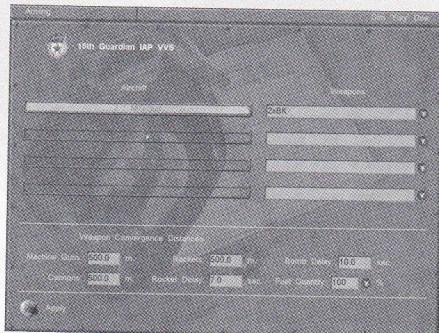
the Western powers allied themselves with the Germans against the Soviet Union. His hope was in vain. At midnight on May 8, 1945, a ceasefire was declared. Germany capitulated unconditionally to the allied forces. The German Reich, the terrible nightmare of world domination had been brought to an end. The years of the most appalling human rights abuses perpetrated by the National Socialist regime. Putting an end to the terror had, however, involved an enormous cost to the people of the world.

IMPORTANT NOTICE ABOUT THE GAME:

We do not claim to have given absolutely accurate coverage of the history of the war. We have done our best to keep our scenarios in line with the events that occurred in real life.



Arming your plane



Or planes, to be more precise. In most cases, you will have to command someone—and sometimes you will determine the loadout of your subordinates.

There are four parameters that can be defined during armament:

Convergence. Generally, the convergence of the aircraft is determined by the type of weapon, gun and machine gun. The convergence can be modified by the player. Everything depends on your preferences. It should be pointed out that the convergence of the aircraft is determined by the type of weapon, gun and machine gun.

no matter whom you command, this operation can only be performed on your own aircraft. **Rocket delay.** All rockets (except armor-piercing) have two fuses—a contact fuse and a time fuse. Here you can set the time when the fuse will snap into action; possible values range from 0 to 10 seconds.

Bombs delay. Sometimes you have to bomb at very low altitude. In this case you have to set the delay of the bombs. To prevent this you can set the delay of the bombs in such a way that they will explode with a small delay; meanwhile you have just enough time to leave the zone of destruction. The delay is set within the range of 0 (instantaneous explosion) to 10 seconds.

Fuel Quantity. If the flight is going to be short, but you want to load up to the maximum, you can save on fuel. It goes without saying that too much economy of this kind can lead to sad consequences.

Further on, in case you are or have become a commanding officer while going through the Campaign, you can change your Flight loadout (the name of the aircraft or a group of aircraft is emphasized with red) or the whole Squadron. It is easy to determine whether you can or cannot do it at the moment—just click on the Weapons icon in each of the aircraft groups (each Flight has a corresponding window). If you are offered to choose something else, you are free to do so. However, we offer optimal armament and loadout for this mission by default.

You will find the list of weapons with a brief description of the features in the **GLOSSARY** section.



COMMANDS TO GIVE ORDERS TO PILOTS (COMMS)

In the single Missions, Pilot Career and Quick Mission Builder, you can and sometimes should use an opportunity to command from Wingman to Squadron.

To master the basic commands, you should train in the Quick Mission Builder. There are different mission variants with varying quantity of friendly aircraft (from 2 to 10) and a small amount of enemy aircraft. Although not all opportunities of such command are checked in the Quick Mission Builder, the skills you can acquire here will be handy when you play Pilot Career.

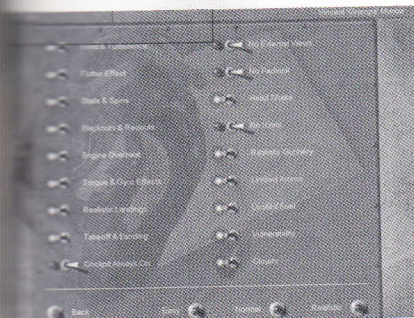
The **Tab** control settings button activates communication (comms) between the player and AI-pilots. The principle is very simple: After pressing the **Tab** button, the list of commands corresponding to buttons 1-0 on the keyboard appears on the screen. The orders or requests have additional submenus, where the list of orders or requests corresponds to actual tasks. They too correspond to buttons 1-0 on the keyboard. After selecting and pressing them, you will get an equal reaction from AI-pilots.

If there is no reaction, this may be a result of an incorrect order or an incorrect time delay. For example, if the friendly planes do not belong to your flight, group or squadron, they will never follow your order. Another example of an incorrect order is if you try to issue an order for bombers to attack fighters. They may try to do it, but it will be an awful result for the bombers (you will usually get such a situation only in the Quick Mission Builder or if a user designs an incorrect mission). The third example of an incorrect order is if the player tries to give an order to rejoin, when some of the friendly aircraft are currently very busy with the enemy. Their reaction to your order may cost them the life of AI-pilots....

Additional training on the subject of orders for AI-pilots and their groups is necessary! Additional training will bring you great success in Pilot Career.

Custom settings

Keep in mind the following: if the switch is On, a red bulb lights up on the left.



Wind & Turbulence. Selecting the option somewhat complicates the conditions you will face while flying your plane. Side wind influences the technique of taking off and landing, and turbulence prevents smooth flying.



Flutter Effect. Flutter is a complicated aerodynamic phenomenon, which occurs at high speed when the construction of the plane experiences increasing vibration. If you fail to quickly bring the plane out of the flight mode in which the flutter starts, the aircraft will most probably disintegrate.

Stalls & Spins. We shall only say here that these situations are extremely dangerous and an inexperienced pilot might not cope with them.

Blackouts & Redouts. With high positive overloads, blood rushes away from the head and everything goes dark before your eyes. This is called the "blackout effect." In real life, you do not use an anti-overload suit (which is not very likely), this effect starts appearing at +5G. Blackout can considerably reduce your field of vision or overlap it altogether.

Redout appears with negative overloads (starting at approximately -2G). It is a blood rush to the head and a red screen appears before your eyes. In most cases, a man and aircraft endure negative overload much worse than positive.

The option in question enables you to switch off these unpleasant physiological reactions. Naturally, if you do so, the level of realism lowers considerably.

Engine Overheat. If this option is selected, you run the risk of overheating the engine when you force it or fly at full speed. The same happens in real life. The consequences can be disastrous.

Torque & Gyro Effects. Torque appears as a result of propeller rotation. The aircraft leans over to the side opposite to that of propeller rotation. To fly evenly you must parry such movements.

Gyro effect. When the engine operates, you have a rather large mass on the aircraft. This mass rotates at high speed and very much resembles a gyroscope. This results in the following: when you try to turn the gyroscope axis in space, additional torque perpendicular to your effort occurs. To put it bluntly, when you do a turn, the right the bow dives, and vice versa.

Realistic Landings. If this option is selected, you might break the chassis on rough landings.

Takeoff & Landing. These two elements of flying are not very easy, especially in real life. This is why you have the option to eliminate them. You will start and finish your flight in the air.

Cockpit Always On. When this option is selected, you cannot make your cockpit invisible. Flying with an invisible cockpit is easier because your field of vision becomes ideal. Cockpit Always On mode is designed for those who enjoy full realism.

External Views. Some people think that taking a detached view at oneself is cheating, because a real pilot has no such opportunity. This opinion is not universal. However, in "IL-2," we offer you the possibility of deselecting this option, which really adds realism.

No Padlock. Padlock is a mode of vision at which the direction of your glance changes constantly to follow the chosen target. There have been a lot of discussions about the realism of such an approach. This is why padlock can also be switched off.

It often occurs that the aircraft experiences intense shake, which obviously affects the head of the pilot also shakes, hindering your field of vision. If you deselect this option, you will not experience this, but lose in realism.

If this option is deselected, each object in the air bears a special icon. First of all, it immediately makes the object much more noticeable; second, its color indicates the type of aircraft and the distance to it. Strictly speaking, one cannot call this option unrealistic. The real picture of our environment is far ahead of its virtual counterpart in terms of resolution and the field of vision of a virtual pilot is more restricted than that of a real pilot. However in real life there were no icons on targets and you cannot select this option.

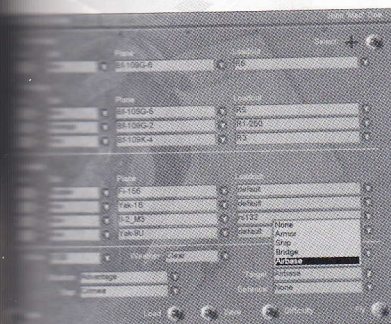
Gun Gnatery. Deselecting this option produces two effects. First, gun and machine gun bullets start going strictly straightforward. Second, the hit effect of bullets disappears.

Unlimited Ammo. If you deselect this option, your ammo will never end.

Unlimited Fuel. If deselected, you get endless fuel supplies.

Invulnerability. If the option is deselected, you become invulnerable. Congratulations! This invulnerability option only works if enemy shells and shots hit your aircraft. However, enemy bullets against the earth your aircraft will still come to pieces.

XIII. QUICK MISSION BUILDER



This is not an editor, but a generator, to be exact. You feed in necessary parameters and get a ready mission on output, which you carry out immediately. This mode can be extremely useful for preparing for online combat.

When you choose the "Quick Mission Builder" option from the main menu, you access a new menu with the following items:

For choosing the country you will be playing for. Click the button to switch over from red star to black cross—these symbols speak for themselves in our opinion.

Number and characteristics of wingmen to be indicated.

Enter information on other flights that will be fighting on your side.

Information on your air enemy.



You can set the following parameters for each flight:

Num	Number of aircraft in the flight, ranging from zero to ten. Your own flight as the only exception. Fighting without yourself close at hand is rather difficult. This is why your own flight should have at least one unit. This unit is you yourself.
Skill	Class of pilots.
Aircraft	Planes constituting the flight.
Loadout	Battle armament for mission.
Map	The map where the action will take place.
Altitude	Altitude at which the action will kick off.
Weather	Weather.
Time	Time of the day. These last two factors—weather and time of day—can exert considerable influence on the development of your operation.
Situation	Parties will have a tactical edge over the other.
Disadvantage	You start at a lower altitude than the enemy.
Advantage	You start at a higher altitude than the enemy.
None	You and your enemy are at the same altitude.
Target	Type of ground target.
Defence	Here, ground anti-aircraft defence is involved. It can be included or left out. You can save the settings you have chosen and load them later using the "Save" and "Load" buttons respectively.

Lastly, after you have tuned the generator to your liking, press the "Fly" button to start your flight.

If your intentions change, you can hit the "Back" button and return to the main menu.

XIV. MULTIPLAY

"IL-2 Sturmovik" offers two main options for working on live targets—via Internet or through a LAN. The choice is made in the multiplayer mode settings (accessed via the "Hardware Setup" item in the main menu).

Hitting live targets is not necessary though. "IL-2" offers two multiplayer types:

Fight between live opponents.

Cooperative fulfillment of a mission where the part of opponent or ally can also be played by AI (computer-controlled aircraft or vehicles and other ground objects).

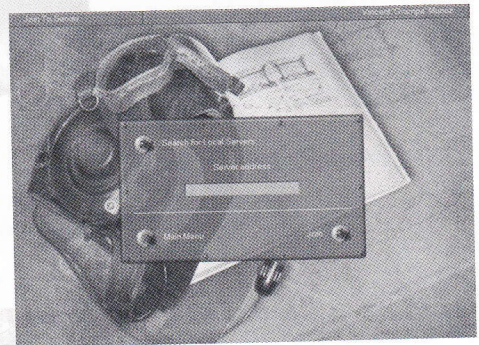
After choosing the "Multiplay" item in the main menu, you access a new menu with the following main options:

Join Server	Log on to the existing server.
Create New Server	Create a new server yourself.
Main Menu	Return to the main menu.

Choosing to log on to the existing server.

After choosing the "Join Server" option, you have two possibilities:

1. Enter the server address in the "Server Address" field.
 2. Search for all servers available using the "Search for Local Servers" command.
- For more information, read the IL-2 README file in Windows: **Start Menu > Programs > Ubi Soft > IL-2 Sturmovik > Read me 1st).**



The result of the search is a list of servers with the following parameters:

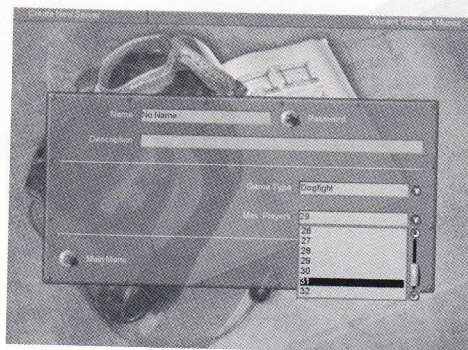
Address	Server address.
Name	Server name (if it were set on the server).
Ping	Indicator of each server's connection speed. The lower the ping, the higher the speed (and this is exactly what you need).
Users	The number of players logged on to the server.
Type	Type of the game (already mentioned: Dogfight and Cooperative).

You should choose a server from the list and press the "Join" button. You can also interrupt the process and return to the main menu with the help of the "Back" button.

NOTE: You can only join an existing Cooperative server BEFORE THE MISSION STARTS. However you can connect to Dogfight server at any time.

Creating a server

The minimum speed connection for acceptable Internet play performance is a 56K modem connection to your Internet Service Provider.



You need to detect your IP address. Do this by running the command **IPCONFIG** on the command prompt.

- Win98 > run Program
Dos prompt > type **IPCONFIG** and read the **IP ADDRESS**.

- Win2000 > run Program
> Accessories > Command Prompt > type **IPCONFIG** and read the **IP ADDRESS**.

Send this **IP ADDRESS** to your friends.

For network play, launch the IL-2 integrated server. You must choose the **Multiplayer** option in the main menu, then **Create new server**. After that you can proceed to the following items:

Name	The name of your server.
Description	Here you can explain the map, time, weather and other conditions and settings you wish to use. Clients will see this description before the connection and decide which server to choose.
Game Type	Dogfight is air combat between live enemies. Cooperative stands for cooperative mission fulfillment depending on the offered scenario.



The maximum amount of players on a server. Ranges from 2 to 32 (up to 16 in Cooperative). Naturally a larger amount of players translates into more serious demands on your hardware.

Creates a game only for the people you know. Multiplayer sessions can be locked with a password to keep stray gamers away. You can set the password and share it with those whom want to log on to your server. To change your password, press the Change button.

After you have set the above parameters accordingly, click the **Create** button and server will be created. The next step is choosing your mission. You can load any standard mission or a mission you created with the built-in mission editor. In either case, all missions will be sent to all the clients.

When a mission has loaded, you can change the **Difficulty** settings. This can only be done on the server. Clients get these settings from the server so they all have the same difficulty settings.

You have to make the common choice of **Born Place** and **Arming** for the inter-connection.

Press the **Fly** button and play.

After connection

DOG FIGHT: Before you press the "Fly" button, you should choose the aircraft you want to fly (press "Arming"), set "Convergence," "Delay," "Fuel Quantity" just like in the single player section. The difference lies in the fact that here you can take a look at every aircraft and change the aircraft's camouflage (if other skin variants are available), the face of the pilot, nationality, regiment, number of your plane, etc. See additional features in the IL-2 README file In Windows: Start Menu > Programs > Ubi Soft > IL-2 Sturmovik > Help > README.

When you are through with these operations, go back to the previous menu and choose home base on the map, from or above which you prefer to start playing (whether you start from home base or in the air above depends on the server's difficulty settings).

COOPERATIVE: Here you are taken to the "waiting hall." This is where everyone gathers and waits for the mission.

The mission is then chosen (this is done from the server) and all agreements between the players are set. For these purposes, you can use a built-in chat or voice chat.

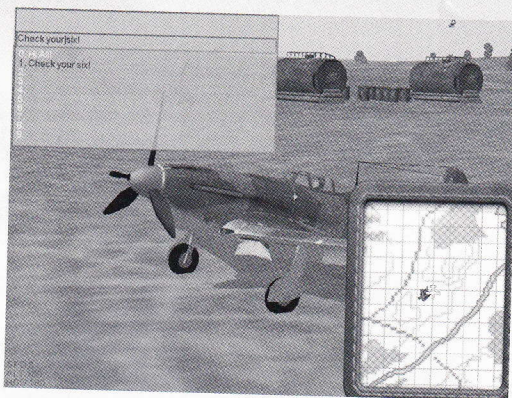
You should choose an aircraft or gunner seat (if available) that has been previously agreed on with other players. The gunner/pilot seat you have chosen will be indicated to the other players awaiting the beginning of the mission. You will also see the aircraft or occupied aircraft before the onset of the mission.



When everything is settled and chosen, press the **Fly** button. The mission is then sent to all players connected to your server.

NOTICE: All the Difficulty settings can only be set on the server. Other players can only read them by pressing the "Difficulty" button, but cannot change them. Thus, the same level of difficulty is set for all players.

Chat in Multiplay



Chat works all the same in all the Multiplay modes except when you just begin to set the game.

In any multiplay mission connection you can use chat by pressing the corresponding button which you defined in "Controls". In flight—by pressing the button or by pressing the button (displays map by default) in "Controls" settings in "Controls" chat window.

The chat has the following features:

You can type messages

- to all players
- to your 'army' (army defined by color of airfields and icons, if the icons used in difficulty settings)
- to any single online player

To send a message to all players, type the message, then press **Enter**. The program subsequently prompts you to select a recipient of the message. Select **ALL** and press **Enter**.

To send a message to your army, type the message and then press **Enter**. Then, as above, the program prompts you to select the recipient of the message. Select **MY_ARMY** and press **Enter**.

You can also send messages to any of the players. To do so, you need to know the player's correct nickname. Type the message, select the free text line and type the player's correct nickname (call sign) before pressing **Enter**.

To find out the nicknames of all the players, type the following in the line for the special message special:

>user

then press **Enter**. You will see the nicknames of all players currently playing the game.



Another important feature of chat that you can use is to preset certain messages which you use often. This really saves time since you no longer have to repeatedly type the same messages.

In the chat window, select—using the cursor keys—the line below the chat line with your message, for example **Check You Six, Break Left, Break Right**, etc. Press the message whenever you want without having to type it out again: Activate the message using the cursor keys and press **Enter**. Then select to whom you want to send this message (see above). If you need to make corrections or replace the message with a new one, use the **Delete** and **Backspace** buttons.

Another important feature: you can resize the window or move it using the mouse.

XV. FULL MISSION BUILDER

It's time to talk about the mission editor. This editor provides for fully manual creation of missions with thorough development of all possible nuances. Its interface differs considerably from the game's general interface, and is based on pull-down menus and buttons.

The editor can work both in 2D and 3D modes. 3D mode can be very useful for indicating exact positions of ground objects. For instance, it allows the tanks to use natural shelters most effectively.

Description of pull-down menus

File menu

This menu is used for loading necessary and input data, testing the results of your work and saving. It contains the following options:

Load Map

Loads the map where the mission will unfold.

Load

Loads a mission that was saved earlier with the purpose of doing more work on it.

Save As

Saves a created mission.

Play

Launches a created mission for testing. The mission has to be saved on your disk beforehand.

Quit

Quits the editor.

Edit menu

Working by the title, this menu is designed for editing different mission parameters. It consists of:

Conditions. This option activates a dialog box where overall conditions for the mission are set. These include time of the day, weather conditions and clouds;

Description. Activates a dialog box where all text information related to the mission is edited: its brief and full description and the text corresponding to the combat task;

Delete All. This command deletes all objects you have created. It is very convenient when you have just finished creating a mission and want to start creating another one. When you use this option it saves you the necessity of reloading the same map.



View menu

This menu is intended for different operations with objects. It contains the following menu items:

Landscape. Viewing the landscape with different lighting. Having set the appropriate lighting, you can achieve a sharper contrast of all mission-related signs against the landscape. You can also display/hide the landscape.

Destruction. Used to set the initial level of building destruction in towns, cities and other elements. Brightness adjusts color brightness in the area allowed for the given destruction level.

Brush Size. Adjusts the thickness of the "brush" determining the zone of destruction.

Destruction Level. Sets the level of destruction within the zone colored with a given color. The left position represents no destruction and bright green color (if restored after destruction actions beforehand); the right position represents maximum destruction. The destruction level in this case will be red. All operations related to the **Destruction Level** settings are performed using the mouse cursor while pressing the F key at the same time. In Destruction mode, you can also destroy, using the mouse, any bridge in the map. Just click on the left or right mouse button on the bridge to destroy or recover it. This function only works in 2D mode with the zoom to object in the map mode.

Display Filter. This menu item enables/disables the display of the types of objects specified. This is required to prevent a complicated picture from becoming overloaded with unnecessary icons.

Icon Size. Size of conventional icons. It can be modified to reach an optimal compromise between their readability and picture readability in general at different resolutions.

Hover Camera. Sets a fixed camera height in 3D mode. This simplifies shifting between 2D and 3D modes.

Show Grid. Shows/hides the reference grid.

Smooth Transitions. If the option is switched on, the transition from the 2D to the 3D image is performed smoothly.

Operations in the editor

Working with the map and 3D landscape

To switch between 2D and 3D modes.

Press Enter. It works when the scale of enlargement has practically reached its maximum value.

To scroll the map in 2D mode.

Map scrolling can be done in two ways.

1. Using the vertical and horizontal scrollbars—as in any other scrolling in the Windows interface.
2. Using the cursor of the mouse with the left button pressed.



Navigation in 3D mode

The center of all movements; it is constantly depicted in the center of the screen. Changing the direction of your glance against the cursor is performed with the mouse. Approaching/moving away is done by moving the mouse up and down without releasing the pressed left button. The cursor itself can be moved using the mouse with the right button pressed (here the cursor does not change its position, only the landscape under it starts moving).

Changing the scale

When the scale constitutes 0.3 of the minimum, the map mode switches off and the editor switches to the 3D relief representation mode.

When the scale is 0.3, the following means are used.

The scale can be changed using a vertical scrollbar at the left of the screen. To scale the map, drag the scrollbar down.

When you move the mouse with the left button pressed and press SHIFT at the same time, a small frame appears on the screen. As soon as the button and the SHIFT key are released, the editor will switch over to the scale at which the field available in the frame will be depicted in the frame.

Working with objects on the map/landscape

Setting the chosen object.

When all you should choose the object. Then move the cursor to a point on the landscape and press the left button simultaneously with CTRL (or just press Ins). The object will subsequently appear in the designated place.

Building the route of an object.

After you have set the object, you can choose a route for it using turning points.

A new turning point is set in the same way as the object itself.

To choose a turning point, click on it; the turning point will become yellow.

To set an interim turning point you should choose one of the ready points on the route and press "Ins," or while holding down the CTRL key, press the left button of the mouse. In this case the new point will appear on the ready route in the middle of the segment between the chosen point and the one after it.

To cancel a choice, press the right button of the mouse. A menu will then appear under the cursor. Choose "Unselect"; the yellow marks subsequently disappear and all points of the route become red.

You can delete a chosen turning point by pressing the right button of the mouse and choosing "Delete" in the menu. The chosen point will be deleted. Deleting point number 0 annihilates the object.



These parameters are divided into three main groups:

All available objects are divided into categories. We provide a more detailed account of this division below.

When the picture appears on the screen, the View button changes to Hide. If you press it again, the 3D image will be deleted.

Here you set the parameters directly related to the object. They depend on its class as follows:

Army. Here you set the side for which the selected object will fight. There are two choices: Red (the Soviet Union) and Blue (Germany). The choice is not bound to any specific type of object; you can make "Messerschmitt" carry red stars in your mission, and you can make "T-34" carry blue stars. You can also make "T-34" want to and vice versa.

Each squadron can have up to four flights. The choice influences the corresponding markings on the aircraft.

Weapons. The list of possible weapons the aircraft can carry depends on their variant. The **By Default** variant means that only guns and machine-guns are included. None variant means that all weapons have been removed.

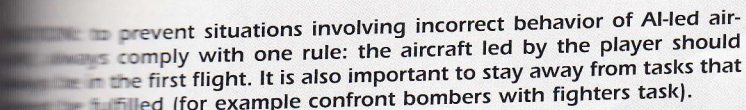
Fuel. Fuel amount carried by each aircraft at the onset of the mission, in percent

Planes. Number of planes in a flight. Ranges from 1 to 4.

Skill. Skill level of the flight pilots. Ranges from 0 (beginner) to 3 (ace).

Player. To be selected if you are going to lead the flight yourself. To be able to do so, you must make sure that the planes in the flight are in the flyable list, i.e. can be piloted by the player.

In Single Missions where ranks are not envisaged, you are automatically appointed commanding officer. If the mission is created for Campaign mode, your rank and your results directly influence which plane in the flight you will fly.



When you create a mission in which you are not going to participate directly at all, you are not using the Player option—the **Player** option wasn't selected. At the beginning of the mission you will find yourself in observer position. You are able to switch between views of different objects. To do this press **"P"** right after the mission starts to pause the game, and then find the appropriate position for viewing in the mission by switching between the different views (using a combination of buttons: Next Enemy Chase View, Next Friend Chase View, Chase View, Next View on Ground Target, External Padlock To Closest Ground Target, External View on Air Target, External Padlock To Closest Air Target, Fly-by View, Next Enemy Chase View, Next Friendly View, Wide View, Normal View, Zoom View in combination with the **"P"** key). You can also switch between views over and over again choosing the most interesting moments of fighting both in the air and on the ground. After that you can save the track file and edit it later.

Important: Vehicles, Trains, Ships, Artillery Categories. For these you set the category and enter markings, which carry no functional meaning in mission structure and serve for explanation alone.

you set the parameters of a selected waypoint. As in the Chief Actor section, they depend to a large extent on the category of the object.

the choice of waypoints more convenient, we have placed Prev and Next buttons on the Waypoints panel. If pressed, they activate the corresponding previous or next waypoint on the route. On their right there is a sign, which looks like A(B), where A is the number of the current point and B the overall number of waypoints.

Waypoint parameters for category AIR

Height. Waypoint height above the earth; in meters.

Speed. The speed at which the flight planes should pass the point.

Time. The time at which the flight should arrive at the point. Changing the Time parameter affects the Speed parameter along the whole route and vice versa.

Type (type of activity). What the aircraft will be doing at the designated point. There are four options:

NORMFLY

By default. Usual flight.

TAKEOFF

If you select this option, the waypoint will be moved to the nearest airdrome.

LANDING

In this case the waypoint will also be moved to the nearest airdrome. If you place it manually to some point in the field, the aircraft will land there.

GATTACK

Ground attack.

Target. Here you set the target for attack. If you press the Set button the switch into choose mode (you can cancel it by pressing the right mouse button). You can set the target in this mode; when the flight reaches the waypoint it will attack the target. If you choose ground target the type of activity will change into GATTACK.

NOTE:

1. For dive bombers, fighters with bombs and IL-2s, you have to set target GATTACK. Otherwise they will attack the nearest enemy object. If you set GATTACK for the waypoint, if only they can find it.
2. For transports with bombs and level bombers: Set waypoint DIRECTLY on the object which you would like to destroy, then set GATTACK for that waypoint. The plane will drop the bombs in that area (you must set the GATTACK waypoint on the target object). Do the same if you use the planes with paratroopers as targets.
3. For dive bombers and fighters-bombers (IAR-81, some of FW 190s) with bombs the altitude has to be MORE THAN 1300m for dive bombing. Otherwise they will drop bombs as level bombers.
4. If you want any of the selected groups of planes with bombs to do level bombing, go to item 2 above.
5. Don't set an altitude that is too low in bomb target areas for level bombers. The plane may be destroyed by their own bomb explosion.
6. Don't set the previous waypoint too close to the point of GATTACK. Planes need some time to rejoin the right formation for the attack. Usually it is enough to set 1-2 km between these waypoints.

TIP: If you have difficulty setting GATTACK on a bridge or other objects/units, you can zoom in to center them on the map and zoom in.

SPECIAL FEATURE

How to make air trains of He 111z with glider Me 321 or Li 2 with glider G-11.

1. Set all waypoints for the flight of He 111z (or Li 2).
2. Set ONLY ONE waypoint for glider Me 321 (or G-11) and locate the waypoint close to the FIRST waypoint of He 111z (or Li 2).
3. Set target object of that Me 321 (G-11) first waypoint to the first He 111z (Li 2) waypoint.
4. Don't set any waypoints other than the first for the glider (Me 321 or G-11). The glider will follow the plane automatically.
5. You can set these first waypoints for both planes and gliders in the air or on the ground (Take Off).

NOTE: These air trains can't land. If you set the landing waypoint for the plane, the glider will disconnect and try to find an area for landing. When you carry out such missions, you should remember that only in the test flights can you get the right result and the glider will make the right landing (not in a forest or a city for example). The glider does not use the engine and will merely glide to the closest free area, if there is one.



Parameters for Armor, Vehicles, Ships:

Everything is much the same as in the AIR category with just one exception: you cannot vary the object's speed. The object will do its best to arrive on time, but everything will depend on its maximum speed and the type of landscape. You can make a ground or sea object stop and wait for some time before it moves.

Setting objects for **Armor** and **Vehicles** categories by roads or directly on roads in the direction of your next Waypoints forces these objects to automatically follow their movement along these roads (except the main roads branching into small roads in towns and settlements where the correct movement of objects can only be achieved with a large number of waypoints, placed on the curves and turns of the streets).

Units in the **Ships** category have simplified AI. They fully interact with the environment in modeled battles, but will never do AI-controlled maneuvers. So, you need to set all their waypoints manually in order to avoid collisions between ships and the correct trajectory of waypoints on the map to get the correct final picture of sea battle. For the landscape, use several static cameras placed in the battle area to watch the interaction between the ships running in the scenario in FMB, and then correct if necessary.

Parameters for Train category:

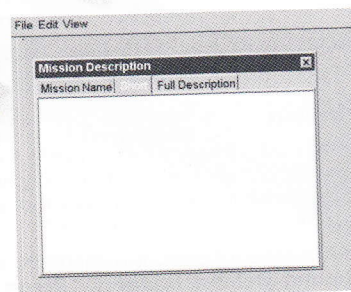
Everything is much the same as in the previous cases, except for the fact that the trains must stop on the route. There is no Timeout parameter for them naturally.

Stationary Armor, Stationary Objects, Stationary Aircraft, Stationary Ships categories. These objects are stationary. Waypoints are not set for them. Stationary objects placed on the map and equipped with arming (except for mines) will also take an active part in military operations.

NOTE: After you have set a Stationary Object you should define its correct position to the objects, for example correct direction of gun fire against advancing enemy or correct heading of the aircraft on the airdrome. To do this click on the object with the maximum zoom in 2D mode and orient it in the right direction using the Right (Grey) Number buttons.

Setting mission purposes

This is also done using the window for setting object parameters. Choose Target category in the Type section. During task editing, the parameter window consists of two sections: Type and Target. The purpose of the mission is set on the map (or landscape) just like any other object.



Type section.

Below is the list of possible purposes:

Destroy. The object nearest to the designated waypoint receives the "destroy" award. The task is considered fulfilled if the marked object has been destroyed.

Destroy Bridge. The same as Destroy, only in this case the icon is put exclusively on bridge type targets.

Destroy Ground. An area of a set radius is marked around the designated point. To fulfill the task, you must destroy at least half of the enemy objects within the radius. The size of the zone of destruction and the time interval are set in the Target section.

Escort. The aim is a group of planes; you should escort them and protect them from enemy attacks. The time interval within which you should escort them is set in the Target section.

Defense. The aim is a ground object. You have to protect it from being destroyed by enemy forces.

Defense Bridge. The same as Defense, but here only a bridge can be the aim.

Defense Ground. As with **Destroy Ground**, an area is marked around the designated point. To fulfill the task, you must preserve at least half of your ground objects in the area. The time interval within which you should defend the area is set in the Target section.

Recon. You have to fly above the waypoint at a distance not exceeding the set parameter and stay there for the set time period. The size of the area and time interval are set in the Target section.

Target section

In this section you set parameters of the task.

Priority

PRIMARY

Main task. You must fulfill it for the overall success of the mission.

SECONDARY

Additional task. Fulfilling it is not compulsory, but if you do you will be rewarded later when the regular awards and promotions come about.

HIDDEN

A "secret" task. The task says nothing about it, but you can discover them yourself in the course of the mission—and this means that you have another chance to excel.

NOTE: You cannot set **Destroy** and **Defense** purposes as the **Target** for static and artillery units. You only can set for them **Destroy Ground** and **Defense Ground**.

Timeout

Some tasks have to be fulfilled before a set time. If you do not fulfill the task within the assigned period it is automatically considered that you have failed. The "Timeout" field is used to indicate the time before which you should fulfill the task. This condition is activated when you choose "Timeout."

In a number of cases, it is impossible to set the time limit. This concerns **Defense Ground**, **Defense Bridge** and **Recon** tasks.



...if the task involves an area, the parameter sets its radius.

...The option only concerns the tasks of Recon type. If placed, you have to land at the indicated point in addition to simply flying along this point.

...When you design your own missions the following two points become important:

...You create a mission where you start on an airfield and plan to achieve high altitude. You should set enough waypoints with the right trajectory or spiral curve where the climb corresponds to the right digits of the planes. It is also very important to make the right settings for AI planes. Use climb rate data for each plane from the View Object menu. To make sure that AI planes will achieve the given altitude, set the correct time between each waypoint where planes make a climb to the next altitude. We recommend that you set a realistic data climb rate on the low altitudes and 2-3 times less at altitudes higher than 4,000 meters. It is also very important to know that the first waypoint with the takeoff on the airfield shows the direction of the takeoff—the icon on the runway border shows the direction.

...If the last waypoint of the aircraft flight is landing on an airfield, make sure that the previous waypoint was set at an altitude of not more than 200-250m and at least 1.5 km before the final landing point and in the direction of the landing glissade to the closest runway border (the icon shows the side from which the plane will land). If your flight was at high altitude, make sure you establish as many waypoints as are needed for a smooth dive to the point of the final approach. If you ignore this advice, we cannot ensure that your plane or the AI plane will have no damage when diving from high altitudes at critical speeds. Especially important for bombers!

Static Camera category. Static cameras are placed in the same way as Static Objects. The difference between the two lies in the fact that you can vary camera height against the landscape surface, which gives you the possibility for further observation of both ground and sea objects and targets. The **Static Camera** option enables you to create missions that are beautiful and interesting for observation. It is specifically recommended that you use it in the following cases:

1. If you have created an extremely interesting mission and are willing to record it to a **track file** to subsequently show it to your friends as a film, or to place such a **track** on the Internet so that other owners of the game can have a look at it.
2. For controlling your mission creation where a rather large-scale ground battle is taking place according to your scenario. Place enough **Static Cameras** without placing them over the whole battlefield. You should bear in mind that the **Static Camera** is also an object that reduces the overall **Frame Rate**.



We recommend that you immediately place ALL CREATED MISSIONS into campaigns. Campaigns are created using the Windows Notepad and is saved in the same directory as the directories. For example, if you have created a mission which you are going to use only as a Single Mission, you should save it in a Single directory. The name of the campaign created earlier you should manually create—in the same directory and in good responding to the country and type of the mission can be chosen in the same way. For example, "Fighter2," "Bomber2," "Fighter-Bomber," etc. Use Windows Explorer for this. All single missions or campaign missions with all subdirectories should be placed in the **Missions** directory of the game root directory. The file should be named **campaign.ini** and should not take any other name, otherwise it will be useless. In using the Windows Notepad, in folder **RU** (or **DE**) you need to create/edit the **all.ini** file where you create/add the name of the new folder with missions for your campaign.

HOW TO COMBINE THE CREATED MISSIONS IN A CAMPAIGN:

All missions created for Campaign mode are combined by name or number in the **all.ini** file. You can do this in one of two ways:

1. Linear. In this case you will proceed linearly through all the missions presented in the campaign. This is a linearly branched scenario.
2. Random. In this case the scenario for the mission will be randomly built, i.e., a randomly branched scenario.

Example of a file for a linear scenario:

```
[Main]
Class IL-2.game.campaign.CampaignBlue
awards Class IL-2.game.campaign.AwardsDEFighter
[list]
BF109_1_1.mis
BF109_2_1.mis
BF109_3_1.mis
BF109_4_1.mis
BF109_5_1.mis
```

Example of a file for a randomly branched scenario:

```
[Main]
Class IL-2.game.campaign.CampaignBlue
awards Class IL-2.game.campaign.AwardsRUBomber
[list]
IL-2M_1_1.mis IL-2M_1_2.mis IL-2M_1_3.mis
IL-2M_2_1.mis IL-2M_2_2.mis
IL-2M_3_1.mis IL-2M_3_2.mis IL-2M_3_3.mis
IL-2M_4_1.mis IL-2M_4_2.mis IL-2M_4_3.mis IL-2M_5_3.mis
IL-2M_5_1.mis IL-2M_5_2.mis IL-2M_5_3.mis
```

NOTE:

1. For randomly branched scenarios, you can set as many single scenarios as you want. It may be one or 100. In the last case the program will randomly select one of 100.
2. Do not forget that for each scenario you would like to make randomly starting, you need to use only one map for all scenarios starting at that point. This is necessary to keep all your successful destruction of ground objects such as buildings and bridges recorded in the next mission scenario. Otherwise the program will automatically skip these battle changes of landscape.



Example of file all.ini

If everything has been done correctly, you start playing the new campaign you created by yourself; all actions are performed in the standard way. Simply choose the country for which you have created your pilot's career version and for whom you have created a new career in the **Pilot Career** Menu. You will find a campaign you have just created in the **Career** window.

HOW TO CREATE MISSIONS FOR MULTIPLAY.

1. DOGFIGHT

For this Multiplay mode you should create born places and choose a corresponding color for them. Born places should only be located on airdromes. The chosen color will later be detected on the icon indicating that it belongs to an army or airdrome.

CAUTION: You can only set stationary anti-aircraft mountings from ground objects and stationary ships from sea objects. If you ignore our recommendations and set something else, these will be automatically withdrawn from the scenario. We also advise you to be clear of this to prevent lock-up or crashing of the program.

2. COOPERATIVE

Here everything is done in conformity with Single Missions requirements: all AI-objects available for Single Play can be used in COOPERATIVE as well. Nevertheless, you must bear in mind the restrictions imposed by data transfer speeds via the Internet:

- The number of planes led by players including gunner seats if the planes are equipped with these should not exceed 16.
- Do not overload your mission with a large number of AI objects because the communication channel may not be able to cope with it, causing the game to periodically hang up for a long time, thus preventing you and your friends from enjoying the fun.



German car column designations:

Ger. Supply Car Column Type I

BMW Bike
Sd.Kfz.251
5 x Opel Blitz 6700A
Opel Blitz 6700A Medical
Opel Blitz 6700A Radio
Opel Blitz Maultier AA

Ger. Supply Car Column Type II

Kuebelwagen VW82t
Opel Blitz 36S
Opel Blitz Maultier AA
2 x Opel Blitz Maultier
Opel Blitz 6700A Fuel
2 x Opel Blitz 36S

Ger. Command Staff Car Column

Pz.IIF
Sd.Kfz.251
Opel Kadett
Opel Blitz Maultier AA
Opel Blitz Maultier
Sd.Kfz.251

Ger. Motorcycle Column

6 x BMW Bike
Opel Blitz 6700A Fuel
2 x Opel Blitz 36S
Sd.Kfz.251
2 x RSO

Ger. Fuel Supply Car Column

Kuebelwagen VW82
6 x Opel Blitz 6700A Fuel
Opel Blitz Maultier AA

Russian and German train designations:

Fuel Train/AA
Steam engine
Coal Tender
Flat car/AA
8 x Tank car

Freight Train
Steam engine
Coal tender
8 x Box car

Freight Train/AA
Steam engine
Coal Tender
Flat car/AA
8 x Box car

Ammunition Train
Steam engine
Coal tender
8 x Box car/Explosives

Ammunition Train/AA
Steam engine
Coal Tender
Flat car/AA
8 x Box car/Explosives

Freight & Fuel Train
Steam engine
Coal Tender
4 x Box car
4 x Tank car

Equipment Type I Train/AA
Steam engine
Coal Tender
Flat car/AA
7 x Flat car/Equipment Type I
Flat car/AA
Equipment Type II Train/AA
Steam engine
Coal Tender
Flat car/AA
7 x Flat car/Equipment Type II
Flat car/AA

Equipment Type III Train/AA
Steam engine
Coal Tender
Flat car/AA
7 x Flat car/Equipment Type III
Flat car/AA

Passenger Train
Steam engine
Coal Tender
8 x Passenger car

Command Staff Train/AA
Steam engine
Coal Tender
Flat car/AA
4 x Passenger car
Flat car/AA

WEAPON (bombs and rockets)

SC 50

Type: General purpose bomb
Weight: 55.5 kg

SC 70

Type: General purpose bomb
Weight: 72 kg

SC 250

Type: General purpose bomb
Weight: 229 kg

SC 500

Type: General purpose bomb
Weight: 500 kg

SD 500

Type: Fragmentation bomb
Weight: 535 kg

PTAB-2,5

Type: Anti-tank bomb
Weight: 1.5 kg

AO-25

Type: General purpose bomb
Weight: 25 kg

FAB-50

Type: General purpose bomb
Weight: 50 kg

FAB-100

Type: General purpose bomb
Weight: 100 kg

FAB-250

Type: General purpose bomb
Weight: 250 kg

AJ-2 Ampoules

Type: Like napalm
Weight: 2 Kg

VAP-250

Type: Like napalm (phosphorus)
Weight: 250 Kg

RS-82, RS-132, M-13 – Rockets with demolition warhead.
BRS-82, BRS-132 – Anti-armor rockets

...that want to restrict you to a set number of AI-objects. The main rule says the less objects, the better. A huge amount of objects can be set at your own discretion and risk. You should determine the possibilities of your communication channel and those of the Internet. However, we highly recommend that you familiarize yourself with similar missions shipped together with the game. For this purpose, load our missions in the Full Mission Builder and see how they work.

We do not recommend using the maps with a large amount of buildings in the game. For example, Berlin where over 500,000 houses are displayed on the map; the amount of each house is regularly checked by the program and sent via Internet to other players. This can lead to noticeable online game freezes. Recommended cards include the cards for Online Play as well as **Prokhorovka**, which was initially modeled for Single Play, but for COOPERATIVE as well.

XVI. GAME GLOSSARY

Russian car column designations:

Rus. Supply Car Column Type I

GAZ-67
2 x ZIS-5 Medical
5 x ZIS-5

Rus. Supply Car Column Type II

Willis MB
6 x Studebecker Truck
3 x ZIS-6 Fuel

Rus. Command Staff Car Column

GAZ-67t
GAZ M1
ZIS-5 AA
2 x ZIS-5
ZIS-5 Radio

Rus. Katyusha Car Column

GAZ-67t
6 x Katyusha
2 x ZIS-5
ZIS-6 Fuel

Rus. Studebecker RL Column

Willis MBt
6 x Studebecker Rocket Launcher
ZIS-5 AA
2 x Studebecker Truck

Summary:

Artificial Intelligence. In the game industry, this term is used to define computer-controlled units.

Flight model.

Damage model.

Quick Mission Builder.

Full Mission Builder.

Reconnaissance.

the View Object Menu:

VVS RKKA. Soviet Air Force

Luftwaffe. German Air force

VVS. Military research institute, where all Soviet, Japanese or captured aircraft were tested during or after the war. When we were developing our simulator we used a lot of this data together with original sources from aircraft manufacturers.

Combat Turn. maneuver in which a plane reverses its direction and gains altitude without losing a great amount of airspeed. In general, a climbing 180-degree turn.

the Full Mission Builder:

AA. Anti-aircraft artillery and machine guns.

AAA. Anti-aircraft artillery and machine guns.

AAA. Anti-aircraft artillery.

Glissade. Landing trajectory of aircraft.

Home Place. Home base where your aircraft will be "born" in a multiplayer session.



Technical and Customer Support

Before contacting Ubi Soft Entertainment's Technical Support Department, please read through this manual and the readme file. Also browse through our FAQ and search our support database at our website, <http://www.ubisoft.com/support>. Here you will find the most recently updated information since the games release.

Also please make sure that your computer meets the minimum system requirements. Our support representatives will be unable to assist customers whose computers do not meet these criteria.

Whenever you contact the Technical Support Department, please include the following information:

- Complete product title (including version number)
- Exact error message reported (if applicable) and a brief description of the problem you're encountering
- Processor speed and manufacturer
- Amount of RAM
- Maker and speed of your CD-ROM or DVD-ROM drive
- Type of Sound Card you are using
- Video card that you are using and amount of RAM it uses
- Operating system

Contact us over the internet

Our website contains the most up to date Technical Support information available including patches that can be downloaded free of charge. We update the Support pages on a daily basis so please check here first for solutions to your problems <http://www.ubisoft.com/support>

Contact us by e-mail

For fastest response via e-mail, please visit our website at: <http://www.ubisoft.com/support>

From this site, you will be able to enter the Ubi Soft Entertainment Solution Center where you can browse through our listings of Frequently Asked Questions (FAQ), search our database of known problems and solutions, or, for fastest e-mail response, you can send in a request for Personal Assistance from a Technical Support Representative.

If you don't have access to the World Wide Web, you can contact our Support Department by e-mailing them directly at support@ubisoft.com. Please ensure that you include all of the bulleted information above for your computer when sending e-mail to this address. It may take up to 72 hours for us to respond to your e-mail depending upon the volume of messages we receive.



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Contact us by phone

You can also contact us by phone by calling **(919) 460-9778**. Note that this number is for technical assistance only. No hints or tips are given over the Technical Support line. When calling our Technical Support line, please make sure you are in front of your computer and have all of the necessary information listed above at hand.

We are pleased that our Technical Support Representatives are available to help you Monday-Friday from 9 am-9 pm (Eastern Standard Time).

We do not charge for technical support, normal long distance charges apply. To avoid long distance charges, or to contact a support representative directly after these hours, please feel free to use one of the other support avenues listed above. E-mail responses usually receive a response within 2 business days.

Contact us by standard mail

If these fails you can write to us at:

Ubi Soft Technical Support
2000 Aerial Center
Suite 110
Morrisville, NC 27560

Return policy

We do not send any game returns directly to Ubi Soft Entertainment. It is our policy that game returns must be dealt with by the retailer or online site where you purchased the product. If you have a damaged or scratched CD, please visit our FAQ listing for your game and get the latest replacement policy and pricing.



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Flight manuals of the Yak-3, IL-2(1941), Tu-2, Pe-2, I-153, I-16, P-39 Airacobra, P-63 Kingcobra, Ju-88, BF-109G-2, BF-109G-6, BF-109K-4, FW-190A and many others.

Considerable technical data on the trials of the NII VVS. These cannot all be listed here.

Original manufacturing data.

Complete technical descriptions and blueprints for most modeled aircraft.

We strongly recommend that you read the book series: "Black Cross – Red Star. The Air War Over the Eastern Front."

XVIII. CREDITS

IC Maddox Games

IC Maddox

Lead of IC Maddox Games. Lead designer. Head of Games Development Department of IC Company.

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Lead of Games Division of IC Company.

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Lead programmer.

Igor Antonov

Aircraft FM and AI programmer

Dmitri Soldatenkov

Aircraft FM and AI programmer

Sergei Sokov

Sound AI and 3D programmer

Roman Deniskin

Lead 3D Designer. Cockpits and all aircraft features programmer.

Iuri Kryachko

Visual effects and 3D graphics programmer.

Rudolf Heiter

Programmer and sound engineer.

Sergey Shaykin

Programmer.

Grill Ivanov

Programmer.

Kuzma Lykov

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Vladimir Kuznetsov

3D modeler. Aircraft FM and AI Programmer.

Vladimir Veruygin

3D Modeler. Missions designer.

Eugene Inozemtcev

3D Artist

Mikhael Starchenko

Artist. Skin maker.

Ilya Shevchenko

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